THE

LARYNGOSCOPE.

VOL. XI. ST. LOUIS, MO., NOVEMBER, 1901. No. 5.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

VOCAL NODULES.*

BY CHARLES H. KNIGHT, M.D., NEW YORK.

Professor of Laryngology Cornell University.

Of the various names given to this pathological condition, that selected for the title of this paper seems the most appropriate. It has already been applied by Elsberg and a few others to certain anatomical formations in the larynx, but confusion is not likely to arise since its use in the latter sense has not been generally adopted. The term "singers' nodules" implies a professional factor by no means always present. A large proportion of these cases in my experience has been in those who use the voice in singing but little or not at all. "Chorditis tuberosa" suggests an inflammatory origin, whereas marked hyperemia even is rather an exceptional feature. "Trachoma of the vocal bands" and "pachydermia laryngis" are terms used to designate processes histologically allied to "vocal nodules," but very different in their clinical aspects.

It is impossible for me to add anything to the admirable picture of this interesting disease drawn by F. I. Knight in a paper on "Singers' Nodes," read before this association in 1894, and by C. C. Rice, in a paper entitled "Chorditis Tuberosa," read in 1890. In the contributions to the literature of the subject during the past year it may be noticed that Rosenberg reverts to the idea first propounded by B. Fraenkel that these nodes are of glandular origin, in spite of the fact that sections of the tumors by Rice, Kanthack and others prove beyond question that they are composed of hyperplastic tissue.

* Read at the annual meeting of the American Laryngological Association, May, 1901.

In the opinion of Chiari mucous glands are very seldom met with in their constitution, while Garel and Bernand in a study of 144 cases and numerous sections found not the slightest trace of glandular elements. The observers just quoted agree that they are more common in women than in men and that they are not infrequent in children. One of T. Morris Murray's cases was only seven years of age. As to the greater prevalence of the condition in women the chivalrous explanation has been offered by Chiari that they make more effort than men to produce a pure and pleasing quality of tone. The confusion and disagreement prevailing as regards nomenclature and pathology apply to nearly every question bearing on this subject, partly it is believed in consequence of failure to clearly differentiate the lesion. For example, the relation of vocal nodules to tuberculosis is still undetermined. In the discussions at our meetings we find arrayed against the tubercular origin of the lesion, or its special association with tuberculosis, French, Delavan, F. I. Knight and Rice, while Daly has always met with it, "with one or two exceptions, in patients with tuberculous tendencies, either inherited or acquired." Jonathan Wright expresses the opinion that "in exceptional instances there seemed to be a diathesis, particularly among phthisical patients," and Simpson believes that while the nodes are not necessarily tubercular "a tubercular subject would be more disposed to their formation." In my own observation the connection between vocal nodules and tuberculosis is purely accidental.

The opportunity to study a vocal nodule developing almost under one's eye is not often given, but has come to me within a few months and has suggested several perplexing questions. My patient is a lady approaching middle life who never sings, except occasionally in service on Sunday, but who is a good deal of a talker. She came to me originally for a laryngitis, and the most noticeable thing about her voice in addition to its huskiness was a very pronounced "throaty" quality. In the laryngoscopic mirror were seen the usual appearances of a chronic laryngitis, and the epiglottis was buried in a mass of lymphoid hyperplasia extending across the base of the tongue. Treatment consisted of destruction of the lymphoid tissue at repeated sittings with the electric cautery and sprays to the larynx of alumnol, twenty grains to the ounce of water. This was followed by decided improvement and the patient went through the summer very comfortably. In the latter part of September she caught cold and had a slight cough for a week or so. During this atttack she sang in church one Sunday under circumstances which particularly excited her interest and emotions. Her voice became hoarse and did

not regain its smoothness with recovery from the cold. When the larynx was examined three weeks later a small nodule could be seen projecting from the upper surface of the left vocal band at the junction of the anterior and middle thirds. The margin of the band was free. Both cords were muddy, but there was no special hyperemia. The voice was hoarse, rattling and throaty, especially where the change from chest to head register takes place. (G. A.) The larynx was very intolerant, even under strong applications of cocaine, so that it did not seem judicious to attempt any radical interference. Rest of the voice, inhalations twice daily of a solution of menthol in albolene, five grains to the ounce, and spraying the larynx every other day with a watery solution of alumnol, twenty grains to the ounce, was the course of treatment followed for several months without much change. At times it seemed as though the nodule were shrinking and occasionally around it would appear quite an area of hyperemia. Almost always the latter phenomenon could be traced to some indiscretion in diet, as to exposure, or in the use of the voice. Finally at my suggestion a course of elocution was begun with a professional voice trainer, who has had considerable success in correcting bad habits of speech. The method used is similar in many respects to the system of vocal exercises advocated by Curtis in the treatment of vocal nodules. The latter may be briefly described as follows: The first point insisted upon is a correct method of breathing. The upper ribs are raised, the chin is depressed and respiration carried on by the diaphragm and lower ribs. An effort is made to focus tones in the face, producing them as it is expressed *dans le masque*. The word or syllable used in vocalizing is "ma" or "mau," the "m" being formed, of course, while the lips are closed. The muscles of the pharynx and neck are thus supposed to be completely relaxed and the vocal bands to be in a state of greatest possible tension. A peculiar tickling vibration of the lips against the incisor teeth can be felt during the humming "m" sound, provided the muscles about the mouth are properly relaxed. Most remarkable results from the practice of these vocal gymnastics are claimed in various laryngeal derangements due to misuse or fatigue of the voice. I suspect that the exercises are substantially nothing more than a modified rest, as compared with ordinary vocalization, and the expression "vocal massage," sometimes used to describe them, seems to me a gross misapplication of the term.

The treatment of vocal nodules is divided by Capart into hygienic, medical and operative. Nearly every observer refers to the possibility of their spontaneous disappearance under prolonged

rest, but Capart avers that he has never seen the slightest benefit from rest except as regards a concomitant inflammation of the larynx. Sprays and insufflations of astringents and antiseptics he looks upon as useless, and chemical caustics, like nitrate of silver and chromic acid, he discards on account of the risk of their diffusion. Ablation of the growth with a fine delicate forceps, and if that is impracticable its destruction with the galvanocautery are recommended. He warns against the use of so-called "punch" forceps lest an excessive amount of tissue be removed and the voice be irreparably damaged, but on the other hand offers some reassurance by recalling the experience of Labus with what he calls "decortication" of the cord. Vocal rest, especially after operation, change of method in singing, and possibly climatic influences may contribute to a cure. The difficulty of enforcing absolute silence in these cases can seldom be overcome. The delicacy and patience required for endolaryngeal manipulations with a view to restoring or improving the function of the larynx lead one to hesitate in adopting operative methods. It may be urged that in any case the voice is impaired and cannot be made much worse by damage to the cord in attempts at removal, and from this point of view doubtless some would be persuaded to submit to operation, and take the chances.

The decided benefit in certain cases of inoperable malignant disease following ligation of arteries supplying the affected region led to the reflection that analogous effects might be obtained with that powerful ischæmic, suprarenal extract. Accordingly daily instillations of adrenalin chloride, one to five thousand, were made in the present case for a period of three weeks. In the meantime the vocal exercises were continued. The improvement in the voice is apparent both to the patient and her auditors. The nodule itself has certainly shrunken to some extent, so that we feel encouraged to persevere with this line of treatment.

In view of the tediousness and disappointment attending the treatment of vocal nodules it would be a satisfaction if we might discover their cause and thus be enabled to adopt preventive measures. Laryngeal lesions and vocal defects due to some disease or deformity of the accessory organs of speech are usually remediable. In the production of the so-called "throaty" voice the extrinsic muscles of the larynx, especially those attached to the hyoid bone, are brought into action. It is easy for anyone to demonstrate this upon himself by placing the fingers in the hyoid region during tone formation. The result of this muscular action

is a dragging down of the hyoid bone, the base of the tongue and the epiglottis, in consequence of which the sound waves are repressed within the larynx and fail to reach the resonating chambers. The causes leading to the formation of throaty tones are, first, a misconception on the part of the voice-user that the quality of tone is thereby improved; second, a strain or tiring of the intrinsic muscles of the larynx due to faulty vocal method which demands the help of the extrinsic muscles, and finally, a mechanical obstacle to the emission of the voice at some part of the upper air track. The first is most prevalent among the uncultured and those unfamiliar with pure musical tones. The second is unhappily common and may be ascribed in part to the ubiquity of ignorant self-constituted voice-trainers. Most conspicuous among the third of the causes enumerated must be mentioned lymphoid hyperplasia at the base of the tongue, hypertrophy of the lingual tonsil. The last was most graphically illustrated in my case. It should not be inferred that the throaty voice is responsible for all vocal nodules, or inevitably creates them. Were such the case those curious anomalies would be the most frequent of laryngeal lesions. But, in my opinion, *misuse* of the voice is a much more probable element than *overuse*. In a recent paper on this subject Krause maintains that the misuse of the voice productive of nodes occurs in singing and not in speaking. Furthermore he says that the "throaty" voice is due to an effort to overcome a lack of tension of the vocal cords whose elasticity is impaired by the nodular development within their structure. With apparent inconsistency he adds that the increased tension of the vocal bands gives rise to a pachydermia first in the region of the nodule, then at the vocal processes, and finally in the interarytenoid commissure. In other words the node causes diminished tension; an effort to increase tension causes the node. As to the relative frequency with which the singing and the speaking voice suffer from this lesion it seems to me that *à priori* we might expect the latter to be first to succumb under stress, such as would be involved in talking to a deaf person, in a large auditorium, in the open air, or against a loud noise, for the simple reason that the range of the speaking voice is much more restricted than that of the singing voice. The former is generally limited to two or three notes of the scale, the latter often extends over more than two octaves. Hence much less variation in the motility of different segments of the vocal bands occurs in the former than in the latter. It is possible that an inquiry into the mechanism of the vocal bands may throw some light on the etiology of these nodules. It is found that some anatomists,

Morris and others, call attention to the fact that the thyro-arytenoid muscle distributes fibres to the margin of the cord which act in a manner analogous to that of the stop-finger on a violin string, limiting vibration to one portion of the band. Is it not conceivable that contraction of certain bundles of these fibres with too much vigor or excessive frequency may lead to hyperemia, tissue building, hyperplasia at their point of attachment on the surface of the band? Or possibly a minute localized hemorrhage may take place and subsequently undergo organization. It would seem reasonable to suppose that the constant tugging upon these fibres in the production of a certain tone might induce an effort of nature to fortify the region of their insertion by throwing out new tissue, or that an effusion of blood might follow a rupture due to sudden and violent muscular contraction. The idea that attrition of the vocal bands might be held accountable as an exciting cause has always seemed to me untenable for the reason that during phonation space must remain between the bands in order to permit the blast of air to escape and hence there can be no friction. Moreover, the node often has its origin, as in my case, not on the margin, but on the upper surface of the band. In the translation of Joal's work on "Respiration in Singing," Wolfenden asserts that the nodules are produced by attrition resulting from the so-called *coup de glotte*, "which can not be made without bringing the vocal cords in contact." "Contact" is very different from "attrition." The former even to a forcible degree must be admitted in the production of the "stroke of the glottis," but it is impossible to suppose under any circumstances an actual rubbing together of the vocal bands in such a way as to cause structural changes. If the theory suggested above be correct, the obvious conclusion is that a faulty method of phonation is generally induced by some anomaly in the upper air track and can be overcome only by restoring the latter to a normal condition. In excising or destroying the nodule we remove the result and not the main cause of the difficulty.

147 W. Fifty-seventh street.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 287.)

THE PRAE-RENAISSANCE PERIOD.

To the superficial reader of mediaeval history the causes of the Renaissance may seem mysterious and puzzling. It requires, however, only a moderate amount of reflection and study to understand that the infusion of the vigorous new northern blood into that which flowed in the veins of the old races, dwelling around the Mediterranean, produced a new and, from the cross breeding, a more vigorous race of men. Amid the ruins of Rome, ignorance, superstition and fanaticism, the interminable wars, the terrible devastating plagues had induced a grovelling misery and a poverty, for many ages foreign to the sunny slopes of the Cis-Alpine hills and fertile valleys of Italy. The primeval forces of Nature thus working through evolutionary laws again produced in this garden spot of the world a race of men from which the weak in body and mind had been weeded out. The soil was ripe for the seeds wafted from other civilizations now rapidly approaching collapse.

Learning in the Middle Ages.

Daremberg* does not succeed in convincing us that much if anything that may be called medical learning really was to be found in Europe in that period which lies between the deluge of the barbarians from the north and the introduction of Arabian science. The ruthless hand of Gregory the Great (Pope 590–640), had long since demolished the library on the Capitoline hill which the munificence of Augustus had founded. His motto: "Ignorance is the mother of devotion," supplied then a sufficient defense as it now furnishes an ample explanation of the deed. He himself was one of the most learned men of his times, but the intellectual treasures of the Ancient World had been lavished on his barbarian soul in vain. Some manuscripts, it is true, with other weaklings had found a refuge in the hidden recesses of the cloisters of sordid monks, who sought as eagerly for safety in this world as for Paradise in the next, but these manuscripts escaped rather through the negligence than the respect of the priestly

* "Hist. des Sciences Med." 1870, Vol. I, p. 277.

rabble.* Famous schools, it is true, existed at Monte Cassino, Amalfi, Naples and Salerno during the Middle Ages, but what their learning consisted of it is impossible to know. Professor Ordronaux' elegant edition of the Regimen Salernitanum gives a hint of it in many places. We may easily form a picture of a circle of lusty, merry, dirty monks sitting around a rough table, and with beer mugs and drinking horns held on high roaring forth the refrain:

"Si tibi serotina noceat potatio vini
Hora matutina rebibas, et erit medicina."

Influence of Arabian Science.

The origin of the School of Salerno is unknown, but there is little doubt that such learning as there existed was derived through the Jews and possibly through other sources from the Arabians. It was there, or at Monte Cassino (1086), that Constantine, an African prelate, after a sojourn of thirty-nine years among the Arabians, where he is said to have been a pupil of Avicenna, wrote his plagiaristic works which he did not dare, and perhaps did not wish, to credit to the pagans Hippocrates, Galen, Avicenna and Haly Abbas, from whom everything in them of value was miserably transcribed. By such means, at first secretely, then openly, the knowledge of the Arabs found its way into Europe through Italy and Spain, and this process was greatly facilitated by a few enlightened individuals, who, like Constantine, had spent their youth at the courts of the Arabian monarchs.

Averrhoes introduced skepticism, "le flambeau de la science," as some Frenchman calls it, to the Arabians and was duly hated by the Mahometan and Christian dogmatist alike, but this was a mere undercurrent in Christian Europe for a long time, too feeble to be perceived amidst the robust but grovelling superstition of the times. Pope Sylvester II had been educated at Cordova, spoke Arabic like a Saracen, and had been elevated (999 A.D.) by the politics of the time to the chair of St. Peter as a creature of the Emperor Otto III. The influence of the Arabians on the science of the Middle Ages may be strikingly witnessed in the Inferno of the pious Dante where Hippocrates and Galen are joined to the shades of Avicenna and even to that of the hated Averrhoes. (Canto IV l., 144.)

---

* Daremberg: "Hist. des Sciences Med." Vol. I, p. 256, quotes from a mediaeval author as follows:

"Clerici nostri temporis potius sequntur scholas Anti-Christi quam Christi, potius dediti gulæ quam glossæ: potius colligunt libras quam legunt libros; libentius imitantur Martham quam Mariam."

Nevertheless, as Guizot says, it is difficult to imagine what would have happened after the downfall of the Roman Empire in Europe if the Christian Church had not been organized. It stepped in first as the handmaid and then as the mistress of the civil power, and thus by furnishing some sort of authority, having its real foundation deep in the souls and supertitions of man, brought order out of chaos. It was Gregory the Great who was active in the destruction of learning in Italy, but who nevertheless was a great power of cohesion where all things tended to disruption. Gregory VII was the great Hildebrand who, when elected pope, substituted ecclesiastical for imperial tyranny, and in 1077 King Henry of Germany waded barefooted through the snow of the Alps to humble himself at the feet of the pope at Canossa. Again the civil power gained the ascendancy under that liberal man of genius, Frederick II (1194-1250), king of the two Sicilies, who had imbibed much learning and freedom from superstition by his Arabian education and affiliations. He rendered the greatest service possible to the art of medicine by his decree ordering the dissection of the human body.

Influence of the Church.

As has been said Greek men of learning, rats from a sinking ship, flocked into Italy with their precious manuscripts from Constantinople, many coming before the crisis and many escaping at the final shipwreck in 1453. They found for themselves and their learning an asylum in Italy, where the great families of the Medici, the Farnese, the Este, the Colonna, the Gonzaga, enriched and enlightened for the most part by maritime trade, and urged by the influence of Petrarch, gave them a welcome and an enthusiastic reception which fanaticism had denied the Arabians. But Petrarch's welcome extended rather to other branches of letters than to medicine, whose practitioners he lashed with a fierce satire from which Molière later drew his inspiration. A hundred years before the fall of Constantinople, on hearing of the loss at sea of a vessel carrying a valued and a learned Greek friend, Petrarch's first thought was to inquire if perchance the surviving sailors had not saved some Greek or Latin manuscripts which might have been among his effects.

Influence of the Greeks.

It has been noted that from the time of our first knowledge of the School of Salerno to this epoch medical learning was derived almost wholly from Greek sources through the Arabians. This prae-Renaissance period of perhaps 300 or 400 years includes Henri di Mondeville, Mondino di Luzzi, Guy di Chauliac, Arnold di Villanova, Petrus d'Abano, Brunus, and others, the first fruits

of the seeds of learning of modern Europe from the old stock of Hippocrates and Galen.

Influence of the Crusades.

Even the most cursory review, such as this professes to be, of the salient influences in the spread of knowledge can not ignore the crusades. As two thousand years previously the Grecian hosts are said to have attacked the walls of Troy, the holy city of Jerusalem was the scene of another furious onslaught of western brute strength on an eastern metropolis. Homer draws a more artistic and vivid, but no more fearful picture of the sack of Troy than later historians do of the capture of Jerusalem by the crusaders. Returning, if his thirst for blood and holy relics was not satiated, the crusader at least brought with him, as doubtless did the ancient Greeks, more enlightenment than he set out with. The survivors of the mighty hosts brought with them back to their homes not only the bones of the saints and the splinters of the true cross, but a broadened knowledge of men and things. The aggregations of such large bodies of men, under the necessity of acting more or less harmoniously, laid the foundation for the spontaneity with which various movements of European social, political, and religious activity subsequently occurred. Different nations and different conditions of men became, to some extent, mutually helpful in their various struggles towards liberty with that ecclesiasticism which had fattened on their estates and their temporal power during the absence, which the priests had urged upon them.

Italian Science.

"The eagerness with which the Arabians had collected the medical works of the Ancients hardly surpassed the zeal with which the Italians of the Fifteenth Century pursued the same course, and Cosmo Medici may be compared in this respect with Khalif Mamun, but let us mark the difference. The Arabians translated, they often even destroyed the originals, and their own ideas so permeated the results that they theosophized Aristotle, turned astronomy into astrology and made use of these in medicine. The Italians on the other hand read and learned. The true Aristotle eventually crowded out the Arabian*; out of the unaltered writings of the Ancients they learned their Science, Geography directly out of Ptolemy, Botany out of Discorides, the Science of Medicine out of Galen and Hippocrates."†

---

* Guizot (Hist. de la Civilization en France. Edit.16, T.12, p. 182) asserts positively that the knowledge of Aristotle was not, during the Middle Ages, derived exclusively from Arabian sources. Alcuin did much in the time of Charlemagne to keep alive the acquaintance of the learned with the works of the Ancients.

† Ranke: Geschichte der Papste, Bd. 1. Cap. 2.

The Ancients not only supplied them with knowledge as they did the Arabians, but they inspired them with such a thirst for it that their own authority in science was soon destroyed, something which had never happened with the Arabs. The popes and the clergy in fostering at first these beginnings of intellectual life were conjuring up Genii which in a few centuries were to rob them of all but a vestige of their power, riches and veneration. It is this progressiveness which in medicine distinguished the European from the Arabian civilization.

Although the Greek physicians from Constantinople brought their language and their manuscripts, they themselves had perhaps directly little influence. Their scientific attainments were insignificant as compared to the Arabians. They were the unworthy custodians of the relics of a former civilization, the puny descendants of a once vigorous race. They were full of lies, superstition and effrontery, and they imposed on the credulity of those still more benighted than themselves, if we are to believe what Petrarch says of them. "To lie like a doctor," he declares was a proverb in his day. This depravity is easily perceived in the counsels of worldly wisdom, which the prae-Renaissance medical writers scattered so plentifully through their works. Henri di Mondeville or Hermondeville in the frank discourse of his surgery is very amusing, but he, quite as much as Boccacio (b. 1313) and later Benvenuto Cellini (b. 1500) displays the general disregard of ethical or moral considerations in his relations to his patients and confrères.

In the history of medicine, keeping step as it does with the history of civilization, it is a long, dreary stretch of a thousand years from the sack of Rome by the Vandals (455) to the fall of Constantinople by the Turks (1453), and even Sprengel, the most phlegmatic of historians, breaks into pæans of rejoicing when he arrives at the Renaissance. In medicine this properly begins with Berengarius, or Berengar del Carpi, but there is a prae-Renaissance period, to which I have referred above, which it will be interesting to glance at for information as to the nose and throat.

The School of Salerno.

Among the Salernitan verses from Prof. Ordronaux' translation we may select "De Raucidine Vocis" or Hoarseness:

> "Oil and raw apples, nuts and eels, 'tis said
> With such catarrhs as settle in the head,
> And leading to a long intemperate course
> Of life, will render any person hoarse."

And the cure for it is

"DE REMEDIIS CATARRHI."

"Fast well and watch. Eat hot your daily fare.
Work some and breathe a warm and humid air;
Of drink be spare; your breath at times suspend,
These things observe if you your cold would end."

"Si fluat ad pectus, dicatur rheuma catarrhus,
Ad fauces bronchus; ad nares esto coryza."

It is singular that, in quoting from the school of Salerno, we so frequently offer evidence of their convivial habits, snugly ensconced as they were in their cloisters sheltered somewhat from the stormy experiences so abundantly detailed in mediaeval history. Johannis Platearius* (1225?), relates that his father cured a "certain Salernitan who was playing at dice, and suddenly felt that he was attacked by 'squinantia.' When he began to be suffocated and had showed the painful place with his finger, as he was unable to speak, my father, of blessed memory, a remedy having come to his mind, placed a wedge between the patient's teeth, and forced into his throat a piece of wood and the skin of the aposthume was ruptured, and thus, blood flowing in great quantity, he was relieved."

'Squinantia.'

Apropos of this word "squinantia," we may note an instance of transformation through the vicissitudes of time, language and translation from the technical Greek to the English vernacular. We have seen how in the time of Aretaeus and Galen they were disputing as to the etymology and significance of the words kynanche and synanche (*vid.* pp. 115 and 128). How this word was translated into the Syriac and Arabic dialects I am not sufficiently versed in Oriental linguistics to know, but when it emerged into Mediaeval Latin it was "squinantia," a term unknown to classical Latin. In the English of Huxham,† not a bad example of a classical English medical writer of the eighteenth century, we find the term changed into "squinzy," and from this to the familiar *quinzy* is but a step.

Gurlt (Geschichte der Chirurgie) quotes from Brunus de Longobardus, who ended his work in 1252, a passage by which we may see the inane confusion into which this old dispute of the Greeks had thrown their witless heirs:

---

* Salernitani excellentissimi practica brevis: De Squinantia f. 177 b. Edit., 1497. Practica Jo: Serapionis dicta breviarium.

† "An Essay on Fevers, to which is now added a Dissertation on Malignant Ulcerous Sore Throat." (1775.)

"Nam hujus apostematis tres sunt species, quarum una dicitur quinantia—alia dicitur sinantia—alia dicitur squinantia." He tries to define the difference between these, but he leaves the modern reader in a fog, and there can be no better illustration found of the paucity of original thought and observation, and even of feebleness of imitation which is so characteristic of prae-Renaissance medicine. In the Glossulæ Quatuor Magistorum the same differentiation is adopted by Rolando.

A still further example of obfuscation and pedantry may be obtained from the same source. Lanfranc was a surgeon who died in 1306, and this is his idea of the topography of the neck; it is untranslatable:

"Quidam tamen faciunt differentiam inter collum et cervicem; gulam et guttur; quæ tamen omnia sub colli nomine comprehenduntur multotiens. Intra collum et gulam ab intra locatur meri, sive ysophagus—ex parte vero interiori versus gulam locatur canna pulmonis—super has duas vias et epiglotus ex tribus cartilaginibus compositus. (The epiglottis was the usual mediaeval name for the larynx, 'canna pulmonis' for the trachea). Guttur dicitur eminentia epigloti; et latus gutturis dicitur gula." Arnoldo di Villanova* (1285) speaks of "squinantia"as a throat inflammation "in quodam folliculo quod est inter ysophagum et tracheam." Going back to the first of these writers who drew their knowledge principally from Arabian sources, we look in vain through the ponderous tome of Constantine the African (1015–1087)† for anything varying from Hippocrates, Galen and Avicenna except in the obscurity of diction and the misapprehension of its sense. It is largely a catalogue of drugs including, for the throat, the swallow prescription and the usual line of stercoraceous remedies. The same may be said of Gariopontus (1040). They were Salernitans and the school had then been in existence, for a time under the Saracens, for several centuries. It only formally went out of existence with many other old things in the time of the great Napoleon, but it had begun to decline even in the time of Roger of Parma (1230), and his disciple Rolando, who were the first writers in whom there is any evidence of originality, and this is seldom apparent. From the text of Rolando‡ we learn that for nasal polypi he at first purged the patient and then "Cum spatumine usque ad profundum evellatur et sagitella inscidatur." The sharp spatula

Operation for Nasal Polypi.

* Opera, Edit., 1509, f. 166.
† "De Morborum Cognitione et Curatione."
‡ "Glossulæ Quatuor Magistrorum." Edit.: Daremberg, 1854, P. 129.

referred to is evidently from Galen. The recommendation for the use of a saw may have resulted from the description of the use of the knotted string in the manner of a saw as described by Paulus Ægineta, just as the latter probably through imperfect manuscripts derived the string operation from the more rational and humane sponge method of Hippocrates. At least in some of the translations from the Arabian books reference to this "sagitella," usually in the way of comparative illustration of the knotted string method, may be found; but Sprengel* says that Rhases recommends the saw as well as the ligature for the removal of nasal polypi. Rolando seems familiar with the knotted string method also, but nevertheless I imagine there is confusion here arising from the transcription.

Tonsillotomy, Uvulotomy, Tracheotomy.

Holmes refers to Roger and Rolando as having observed a neoplasm of the larynx. This, when we consider the general state of medical diagnosis in their day, seems very improbable. The passage in the "Glossulæ" to which he apparently refers does not seem to warrant that interpretation†, but it seems clear to me that enlarged tonsils was the condition the writer had in mind. The last sentence doubtless refers to tonsillotomy. Immediately thereafter follows the reference to the treatment of elongated uvula. For this he had a good deal of faith in an ointment, doubtless carried in the boxes of the peripatetic practitioners of the day, the quacksalbers. This salve was supposed to destroy proud flesh, and cause the growth of better. If no other remedy was efficacious the cautery was to be used as recommended by the Arabians and "Ypocras." He quotes Avicenna in a warning to be observed after uvulotomy, clearly derived in exaggerated form from Galen. The patient should not lie on his back, lest epilepsy, apoplexy and paralysis should be caused. He also had reason to recommend as a gargle the water in which a fat hen had been boiled, a prescription which may be found in the Arabian works. Petrus d'Abano‡ warns against incision of the trachea as dangerous and gives his puerile reasons for the opinion. Arnaldo di Villanova (l. c.) repeats the Arabian hair-pulling formula for relaxed palate, and the fat-hen prescription for sore throat. As for the ridiculous "Lilium Medicinæ" of Bernard Gordon (1285–1307), the title reflecting the stilted style of Chivalry with which Cervantes

* "Essai sur la Medecine," II, 337.

† Est autem quædam passio que nascitur in gula juxta epiglotum quod dicitur folium (?) que quandoque est una et quandoque sunt due carunculæ tenues et late et modus folii que tracheam arteriam et vocem impediunt; cum vero patiens aperit os ad loquelam, se elevant et foramen trachee arterie; cum vero os claudit, subsident, unde patiens vix potest formare aliquod verbum intelligible. Que passio numquam curatur nisi beneficio cyrurgie.

‡ "Concil. Diff." Edit.: 1522. He lived 1250–1320 A. D.

later played such havoc, this seems an utter annihilation of cerebration. Dyspnea was supposed to be due to "weakness as in children on account of the debility of the nerves and paralysis, on account of spasm and many such things," but he recognizes uvulotomy and hints at the advisability of tracheotomy in very desperate cases. The intractability of chronic hoarseness is expressed, however, in the tersest language to which modern science could hardly add anything. "Raucedo post unum annum non recepit curationem. Raucedo ex rheumate numquam curatur, nisi prius rheuma curatur." Platearius (l. c.) gave expression to the same opinion. All these authors shared the credulity of their age. In the records of sorcery, so abundant in the Middle Ages, the accounts of cries and coughs and barkings, especially among the hysterical recluses of the convents, were the symptoms of the convulsive spasms of the pharynx and larynx still occasionally seen, and perhaps, as Dupuoy suggests,* prodromata of the more general convulsive seizures. The ignorant credulity of the age was extremely likely to cause the burning of these poor wretches.

But greater men had begun to appear and in Henri di Mondeville and Guy di Chauliac, his pupil at the University of Montpelier, we have evidence of advancing intelligence and knowledge, which manifests itself however chiefly by a better understanding and rendering of Galen and the Arabians. Their productions in their naiveté are amusing, in their form approach somewhat to the standard of good literature, and in their substance are valuable as giving an insight not only into medical knowledge and ethics, but also to a considerable extent into the spirit and general conditions of the times. There is also to be noted some improvement in the latinity.

Henry of Amondeville.

Henricus de Amondeville,† as he styles himself, declares in his Proemium that he set out to write his Manual of Surgery in 1306. This is just ten years before Mondino di Luzzi is said to have dissected in public the human body, and it will be interesting to note the advances, small but significant, in anatomical knowledge which are evident in the work of Hermondeville (for thus he is also called at times), over the state of it revealed in the citations I have made. He describes the olfactory lobes, not according to Theophilus, whose description was not noted until recent historians have brought it to light; but according to Galen as a part of the brain and the true organ of smell: "Just in front of these

* La Mèdecine dans le Moyen Age.

† "Die Chirurgie des Heinrich von Mondeville," edited by Pagel.

is a certain fossa which is between the two eyes, under the upper extremity of the nose, where the said fossa begins." (He is describing the internal nose). "The reason for the creation of this fossa is twofold: 1. That it may receive the superfluities of the brain, and that they may be expelled through it. 2. That in it the air, carrying a sort of odorous matter, may remain quiet until it is taken up by the organ of smell. From the said fossa spring two canals towards the mouth and the palate through the ethmoid bone. The use of the said canals are threefold. 1. That when the mouth is closed there may be an inspiration of air to the lungs. If this were not so it would always be necessary to keep the mouth open. 2. By blowing forcibly through these the said sieve-like bone (the ethmoid) may be purged of its filthy viscosities. 3. That they may aid in the enunciation of letters."

The description of the external nose which follows is a little better, but while an improvement may be noted over his immediate predecessors, it may be easily seen how much inferior this is to the passage in Galen (Vid. pp. 137 and 142), from which it has been taken, especially in the physiological part of it. The same remark applies to the anatomy of the throat. "From the stomach by way of the——esophagus* there goes a membrane, which surrounds the whole mouth on the inside, and the proof that it comes from the stomach is that when a man is touched under the mouth (in the back of the mouth?) he immediately has a tendency to vomit. Extending into the mouth is the upper end of the esophagus and the air passage which is called the 'canna pulmonis et trachea arteria,' whose opening into the mouth the cymbalar cartilage covers which is the third part of the organ which is called the epiglottis, *i. e.*, the nodule of the throat, which cymbalar cartilage rises up when a man talks and covers very loosely the food way, and when a man swallows food it is depressed and then loosely covers the tracheal artery and the food way remains open, wherefore unless at the time of swallowing it should cover the airway food would enter it, as often happens when, etc., etc."

We meet also with the queer remark of Hermondeville that the flesh of the tongue is white in order that it may change the watery saliva into a color similar to itself. He repeats the mistake of Galen that the lower jaw is made of two bones. Among his thera-

* "A stomachio mediante meri vel via cibi, vel ysophago, quæ sunt idem." Stomachus in classical latin usually meant the esophagus, but was frequently loosely applied to the stomach, while meri is apparently an Arabian word adopted into the Mediaeval latin.

peutics invocations are occasionally recommended. In all the writers before Vesalius epiglottis was a term applied to the whole larynx, and this and other anatomical terms, as among the early Greeks, were used in a bewildering way when they tried to describe the throat.

Guidi Cauliac.

We now turn to the great surgeon of the prae-Renaissance period, Guy de Chauliac,* and so far as the nose and throat is concerned he does not differ materially from his preceptor, Hermondeville. He speaks of the ethmoid bone as belonging to the frontal, which he calls the coronal. In it are the holes for the eyes and "les colatoires des narilles divisez par certaine addition ossue en forme d'une creste di geline a la quelle est planté le cartilage qui despart les narilles." (P. 41.) Although Guy has something to say of wounds of the nose and bandaging, he passes over its diseases very superficially, quoting Avicenna that the obstruction of the nose is "humoral, or fleshy, or crusty," the symptoms of which are the inclination to hawk, the impossibility of breathing with closed mouth, tinnitus aurium, nausea; in short, not a bad summary of lesions and symptoms, but not very specific. His treatment was the snuffing up of water impregnated with various mollifacient and astringent drugs. He recommends for this purpose also the urine of camels, having copied this, of course, from the Arabians, who, in their long and terrible journey through the burning sands of the desert, not infrequently were compelled to quench their thirst with it and to perform their ablutions with sand. His account of the diseases of the mouth and pharynx are also merely repetitions of the medical writings of the Greeks and Arabians. He quotes from Mesua a description of a canula for cauterizing the uvula, "in the head of which at one side is a fenestrum in which the uvula is engaged; and then through the canula is introduced a hot instrument like a knife and it is incised by cauterizing." He also follows the procedures the Arabs had adopted from Paulus Aegineta, for the tonsils and for foreign bodies, quoting Haly Abbas that if it is a leech in the throat, give onions with vinegar, or pull it off with the forceps. In quinzy the following treatment was used after pus was supposed to be present. Quoting from the practice of his predecessors, he says: "The abscess having matured, they first try to incise it with a lancet, if it is to be seen, and the mouth is rinsed out with parsely or with some other of the usual detergents. If, however, it is so far

* "La Grande Chirurgie de Guy de Chauliac—Composée en l'an, 1363." Edit. of E. Nicaise, 1890.

within as not to be seen, it should be broken with the finger nail or by rubbing with something if possible." We are reminded of the rough and ready operation of the old Salernitan on the dice player. He refers to this remarkable procedure of Roger, which we have noted elsewhere for another purpose. "A half cooked piece of meat should be taken and tied to a long, strong cord, and the patient should be made to swallow it, and while he is swallowing it, it should suddenly be jerked out with violence by the cord, and the abscess thus ruptured. The same may be done with a sponge." This was the way Aetius and the Arabians removed foreign bodies, but certainly there is no lack of originality in this for a tonsillar abscess. Through Avicenna he quotes Hippocrates' intubation process by means of gold and silver tubes for the relief of dyspnea, reproducing the Arabian remarks upon tracheotomy. The same may be said in regard to nasal polypi and ozena. "Of the ulcers which are in the nose, some are without superflous flesh and others with it. * * * One should not despise these ulcers of the nose, since as all say they lead to polypus, and polypus of every kind is pernicious." For them he recommends the process of Albucasis, the knotted cord, etc. "Split open the bone according to the four masters, and burn it."

Botium was the name in the Middle Ages for goitre, and they knew nothing better, according to Guy, than the use of setons for the surgical treatment of it—quite a fall from Celsus.* Goitre during these times, as is well known, was cured by the laying on of royal hands, and the patriotic partisans of the kings of England and France carried on an active and spirited warfare in quite orthodox fashion, as to the claims of priority of their respective monarchs.

THE RENAISSANCE.

The Influence of Maritime Commerce.

The removal of the papal court in 1305 to Avignon, where it remained for seventy years, gave Italy an opportunity to develope her own wonderful terrestrial and maritime resources and to lay a solid foundation for the development of civilization. For without wealth there can be no civilization, and wealth, as Spain gorged with the gold of the New World later demonstrated, does not consist of heaps of the yellow metal drained by conquest or superstition from other countries. In Italy the crusades and the religious devotion which made them possible had swelled the leaking coffers of the

* It was not until 1443 that Thomas of Sarrano, afterwards Pope Nicholas V, discovered a manuscript of the De Medicina of Celsus. Hippocrates was translated from the original about the same time.

church in vain, but when the enterprise of commerce had made her merchants princes, the arts and sciences again blossomed along the shores of the Mediterranean. When we remember the foundations laid in the lives of Darwin, Huxley and Hooker in our own day by the knowledge acquired on voyages in her Majesty's service, we may understand the influence such maritime development exercised on the budding civilization in Italy in the fourteenth and fifteenth centuries. The sails of Venice brought not only wealth but enlightenment to her wharves.

The Genoese sailor, the son of a wool comber, had learned indirectly from the Arabs, whom his sovereigns were just driving out of Spain, that the world was round and he was fitting out his three ships to prove it, less than forty years after the fall of Constantinople had extinguished science in the East. The church had denied it. In the process of the suppression of the Pelagian heresy and the establishment of the doctrines of St. Augustine, the book of Genesis had become the reference hand book for the cosmography as well as the cosmogony of the church. Supported thereby, we find the infallible Roman pontiff fixing the age of the world at 6,000 years, while as he walked in the gardens of the Vatican, his sandals were grinding shells which the sea had left there a million years before. At first the hierarchy did noble work in fostering the feeble shoots of learning which began to appear, but later when the vigorous plant began to overshadow them, they strove to destroy it, or rather to train it to grow as they wished, but in vain. It had outgrown their powers. Petrarch (1304-1374) ridiculed the ignorance of the physicians, and Bocaccio (1313-1375) exposed and laughed at the vices of the clergy long before any one understood or attempted to invalidate the slavish compliance with authority which so degraded the human mind. Now, 500 years after Petrarch, we are only reminded that this mental slavery once existed by noting some remnants of it in the waste places of modern civilization, and these are the very localities in which modern scientific and political achievement had their beginning in Europe under the Arabians and the early popes. Petrarch.

The school of Salerno began as early as the time of Charlemagne and Haroun al Raschid during the Arabian Renaissance, and became the Civitas Hippocratis to which Richard of the Lion Heart and other great personages resorted in the search for health. By the end of the crusades the Artisan Guilds began to be formed, family names were adopted, commerce and industry sprang up. The commons in the cities wrested their charters of freedom from

their sovereigns in the twelfth century. The great Gothic cathedrals arose at Paris, Rheims, Rhouen, Strasburg, Amiens. Saint Louis (1226-1270) founded hospitals in Paris, and his confessor thought he was doing more by establishing the theological school of the Sorbonne which took his name. The school of Bologna, where Mondino taught, was started in 1119, and before the fifteenth century universities were flourishing in nearly all the countries of Europe, and all under the jurisdiction of the church.

Revival of the Study of Anatomy.

The Arabians, as we have seen, shrank in holy horror from the contamination of a dead human body, and the students of the School of Salerno, animated as it was by Arab influence as early as the eleventh century, studied the anatomy of the pig. Catholicism also proscribed the study of anatomy by dissection, and at that time the church represented all the public sentiment there was, but the enlightened Frederick II, while successful in his warfare with the pope, commanded (1224 ?) that a human body should be dissected at one of the schools at least once in five years, but after him the emperors kept no abiding power in Italy. The church in those stormy times could not be long kept from temporal power. An edict of Boniface VII, published in 1300, again prohibited dissection not only in Italy but in all the countries under sacerdotal authority. Nevertheless only a little time after this, in

Mondino di Luzzi.

1308, the senate at Venice decreed a body should be dissected annually, and in 1316 Mundinus di Luzzi, called the restorer of anatomy, being the professor in the University of Bologna, had the audacity to dissect two cadavers in public. Besides the importance of this record in the history of medicine it is also a suggestive indication of rising insubordination against papal authority, much weakened by the dissensions which, as we have noted, had removed the court to Avignon, and had resulted several times in the existence of more popes than one. It was also the servile beginning of freedom from the exclusive authority of the Ancients. Mondino did little more than open the thoracic, abdominal and cerebral cavities and refuse to see anything not described by Galen. He says* the functions of the tonsils are "to gather the humidity which they generate for the lubrefaction of the trachea, and to fill up the space so as to make it level between the 'gula' and the epiglottis, and to act as a shield to the apoplectic veins." (The carotids.) He gives the name coopertorium (a cover) to the epiglottis, the latter name as usual being applied to the larynx,

* Anatomia—Restituta per Joh. Dryandrum. Marburg 1541.

which is described entirely in the sense of Galen and with the same superficiality and lack of original observation we have already noted in other writers of this period. For nearly two hundred years apparently little advance was made, in spite of the greater prevalence of the practice of dissection. Let us not be astonished at this, but reflect on the few men to-day who see at the autopsy table or under the microscope anything not set down in books.

Achillini indeed made some important discoveries (1463–1512) in other regions of the body, but the editions of his work are so rare and so wretchedly executed, I have had to depend upon the citations of subsequent authors. It was not until the study of anatomy became a passion with the princes of Italy, as it had previously been with the Ptolemies in Egypt, that the great strides noted in Berengar began. Under their protection the arts and sciences flourished, and the study of the anatomy of the human body by dissection wrought great changes in the practice of the Medical Art.

Berengar del Carpi.

Mondino is called the Restorer of Anatomy, but it is to Berengar del Carpi, who taught surgery at Bologna from 1502–1527 that we owe the actual demonstration of any considerable number of new discoveries. Although he avowed himself to be only the commentator of Mondino, he used the work of the latter principally as a text from which to elaborate his own more extensive and accurate observations.

In Benvenuto Cellini's entertaining autobiography we read his very uncomplimentary reference to Berengar as a charlatan and a mountebank, an impostor and a miser who made enormous sums of money out of his new mercurial cure for cases of the French disease, which according to Cellini, at Rome was "molto amici di preti." We receive a hint of his experience with syphilitic cases by the error he was led into through his defective acquaintance with its laryngeal manifestations. He notes* the declaration of Zerbi that certain French singers have their uvulæ cut off that they may acquire a "grossam vocem," but he does not believe it, because he has seen those having no uvula who were hoarse and had the worst kind of a voice. Following Galen he had great respect for the physiological importance of the uvula. Notwithstanding that we have cause to remember, in reading the works of Carpi, the declaration of Aristotle that authority in science is the worst enemy of the advance of knowledge, and notwithstanding the bad stories related by the uncharitable Cellini, Berengar in his Commentaries and especially in his

* "Carpi Commentarii. Anat. Mundini," 1521.

Isagogæ showed that he was an acute observer of anatomical facts. He thought when he noted the nasal muscles he had made a new discovery, but he was not bold enough to be sure of it in the absence, as he thought, of any knowledge of them by others. He declared, at first with some hesitation in the Commentaries (1521) and later more positively in the Isagogæ (1535) that the larynx is made up of five cartilages, the arytenoids or "cymbalar cartilage" being double, but like his predecessors he speaks of the larynx as the epiglottis, and uses the word coopertorium as did Mondino. He says that he had cured patients with perforation of the trachea, but clings to the old belief that cartilage will not heal, "because," he says, "it is spermatic." He speaks of the substance of the "membranoso co-opertorio" (the epiglottis); "around this there is some fat, especially in the place where it is bound to the thyroid cartilage." Most writers referring to this passage agree with Morgagni in believing that Berengar observed the laryngeal glands abundant at this point, but after reading the text it seems to me more probable that he referred to the lymphoid material in the glosso-epiglottic fossa which we now call the lingual tonsil. He was the first to describe the thyro-epiglottic muscle. He was the first to describe the sphenoidal sinus, which he considered the source of catarrh, and he denied that the ethmoid plate was pervious to the passage of the cerebral fluids. He supposed this to take place through the sphenoidal sinus, because he noticed that in one case the nutrient canal of the bone communicated with the sella turcica beneath the pituitary body, which was supposed to secrete the cerebral fluid. So far as I see this was the first departure from the idea of the ancients, and was an attempt to adjust physiological theories to new anatomical facts, which finally after more than a hundred years ended in the demonstrations of Schneider. He not only noticed the sphenoidal sinus and conjectured that this was the route of catarrhal discharges, but he is said by Cloquet to have been the first to note the existence of the frontal sinuses. Berengar speaks of the lachrymal canal and of the passage of tears through it, explaining that this is the reason we are able to smell odoriferous collyria. Otherwise his anatomy of the internal nose is very superficial indeed.

Cartilages of the Larynx.

Sphenoidal Sinus.

The Revolt from Galen.

Some of the prae-Vesalian writers on anatomy strove to explain the countless variations they observed from the Anatomy of Galen by supposing that men in those glorious days were not made in the same mould as at present. They had degenerated and altered in their structure. This has always been a favorite idea with the poets from Ovid down. It is embodied in the very word

descendants, frequently lingers in the fond recollections of age, and even haunts the title of Darwin's famous book, who indeed has demonstrated the mutability of anatomical structure, but not in a manner to support the assumption of the anatomists of the early Renaissance, who made timid excuses for the originality of their own observations. One may easily see by this servile acquiescence in authority, that it was not only the temporal and spiritual tyranny of kings and priests which enslaved the minds of men. It was the distrust of intellectual infancy, terror stricken at the thought of the loss of support and guidance if they impugned the authority of their predecessors. No fear of papal excommunication and the burning fagots, no dread of being impaled and racked and hung and quartered was at the bottom of this faltering. How ineffectual these instruments of orthodoxy were when used may be comprehended by noting that this intellectual slavery, without the fear of fire here and hereafter, endured quite as long as did that spiritual and political subservience for the perpetuation of which they were employed.

Vesalius.

A few years before the death of Berengar (1550) the open revolt to ancient authority in anatomy was to appear. Vesalius was born at Brussels about 1515, just one year before that mighty ruler, Charles V., who had inherited half of Europe from his various ancestors, ascended the throne of Spain and four years before he was crowned Emperor of the Holy Roman Empire. A great man is Charles V. in political history, and not less great in medical history is his physician, Vesalius. He became professor of anatomy at Padua, and taught also at Bologna and Pisa, before the emperor called him to his court. He made many an anatomical blunder himself, but it is to Vesalius that this fundamental branch of our art owes its modern development. He possessed that attribute of genius, which has been expressed by Carlisle as the ability to see with one's eyes, and the inability not to believe what one sees. He declared that Galen had never dissected the human body, but had depended upon examining those of animals. He ridiculed the excuses which had begun to be made for the discrepancies in Galen's anatomy when compared with the results of dissection. He was much readier to believe in the fallibility of the ancients than that the structure of man had varied in a thousand years. It is very evident that as to the anatomy of the nose and throat Vesalius committed more errors than he corrected, but his persistent refusal to accept either Galen or his preceptors' word for that which his eyes taught him was

false, his unwearied diligence, and boundless energy wrought great changes in anatomical research. He published his great work which would have been a worthy monument for the labors of a lifetime in 1542, at the age of twenty-seven. He insisted upon the greater value to be derived from personal dissection of the human body, a matter left to barbers and underlings by his predecessors and by many of his contemporaries, than by the continual perusal of the anatomical descriptions of the old Greeks and Arabians, and we find him declaring in bitter scorn of one of his preceptors, who had turned against him, that he would be quite content that as many strokes of the knife should be inflicted on him as he had ever seen his master practice on man or beast. (De Radic. Chyn. Epistola.)

For him, as for his predecessors, and for his successors for more than a hundred years, the secretions of the brain percolated through the base of the skull, but he denied that it found passage through the cribriform plate, following Berengar thus far; but he supposed that it went through the lacerated foramina. Nevertheless he ascribed to the perforations in the cribriform plate the function of transmitting air and odors to the brain,* urging the necessity† of combating the idea of Galen as to the exit of fluids through them. His old teacher, Sylvius, whom he tried to treat with deference and respect, loaded him with opprobrious epithets and scurrilous abuse for impugning the authority of Galen in this and other particulars. While Vesalius recognized the mamillary processes as the seat of olfaction he did not ascribe to them the functions of nerves, overlooking the filaments which pass from them and calling the optic nerves the first pair at the base of the skull (l. c. Lib. IV, cap. 3). We have seen that Theophilus had given a better account of them many centuries before, but his observation seems to have been entirely lost to view until revealed by the industry of comparatively recent historians. We may readily understand that the mind of man must necessarily find some explanation for the cribrous condition of the bone here, and it was quite impossible to banish erroneous speculations until a correct understanding was ready to take their place. Zerbi, who lived at the end of the fifteenth century, and met a horrible death at the hands of the vengeful and suspicious Turks now in possession of Constanti-

The Olfactory Nerves.

* "De Corp. Humani Fabrica," Lib. I, cap. 6 and 12.

† "Ad Joachim Pellant. Epist."

nople,* described the filaments which the olfactory bulbs give off, but he regarded them as prolongations of the mamillary processes through which the cerebral secretions found their way into the nose. Most of the anatomists of the sixteenth century regarded them as too soft to be really nerves, but Achillini, who died in 1512, described their distribution in the nose.† Massa, who is said to have died in the same year as Vesalius (1564), wrote‡ this in regard to them:

"Notwithstanding the learned and never to be sufficiently praised Galen, on an examination of the nerves springing from the brain, first at the anterior part where the substance of the brain is, which is called the mamillary caruncles, there are to be observed two soft substances, yet they are not so soft as is imagined, like to the form of other nerves, and they descend, without any doubt, to the nares, and are attached and distributed to the inner substance of the nostrils, for furnishing the sense of olfaction." Nevertheless he hesitates very much to give them the name of nerves, but is inclined to believe they should be so regarded in spite of their soft consistence, and he wonders that the anatomists do not name them as the first pair. Thirty years subsequent to this Varolus,§ in 1572, described them as nerves, and in 1627 Spigelius added them definitely to the other cranial nerves. "Septem his paribus quae vulgo sic recenscentur octavum addimus, quod nervos olfactorios constitit,‖ but even he did not follow the filaments through the cribriform plate. Indeed, even Schneider made the egregious blunder of not accepting them as nerves. Bauhinus,¶ in his commentaries on previous anatomical works, in 1621, still followed Plato in the idea that odor is a vapor of the nature of fire, which ascends through the cribriform plate. Fallopius accepted the old doctrine of Hippocrates that vapors ascended through the sutures of the skull. These vapors Galen, as interpreted by Jacob Sylvius, believed to be sep-

* He had been sent for from Italy to treat a Turkish Bashaw, who improved so much under treatment that the busy practitioner did not think it necessary to remain longer, but sailed away loaded with the gifts of the grateful patient. No sooner had he gone than the patient had a relapse and died. His relatives, believing Zerbi had poisoned him (or did they want his fees?), overtook the ship in which he had sailed away, brought him back to Constantinople, sawed his son in quarters before his eyes and then did likewise with him. This story explains in itself why the Turks had to send away for a doctor, as did the old Persians in earlier times.

† I have derived from Sprengel, Metzger ("Nervorum Primi Paris Historia"), Cloquet and others this acconnt of the work of Zerbi and Achillini, as the originals are, for me, illegible.

‡ "Epist. Med. et Philosoph.," 1542, Epist. VI, p. 58.

§ Cloquet ("Osphresiologie," 1821) gives a most exhaustive history of these nerves, as indeed does Metzger (l. c.)

‖ "De Corp. Humani Fabrica," Lib. VII, cap. 2.; Ed. 1645, p. 193.

¶ "Theatrum Anatomicum," 1621.

arated from the coarser impurities in the lungs which were voided as phlegm, the vaporous portions ascending to the head. Thomas Bartholinus,* as late as the time of Schneider, although he places the olfactories in the category of nerves, does not recognize the filaments as penetrating the nasal cavity. He speaks of the sphenoidal antrum and of the hole in the sella turcica as evidence of the entrance of air and the discharge of the pituitary secretions from the ventricles through them, but he also allowed that secretions passed through the cribriform plate, and had the Hippocratic idea of vapors.

We must now return to the epoch of Vesalius. He led the revolt against Galen, but he had many followers in it. In a matter which much later was the source of a very important controversy he agreed with Galen. He plainly figures an intermaxillary bone.† In this he was followed by Fallopius and Columbus. In his comments upon the descriptions of the pharynx we find that he was as much bewildered as we have been, for he says: "Ingenti nominum pelago fluctuamus." We are, however, still somewhat at sea when we read his chapter "De Faucium Glandulis," though we find some advance over the Galenic anatomy. I will translate literally: "There are three kinds of these glandules, one of which, near the root of the larynx, is situated at the sides of the aspera arteria (thyroid?) we have mentioned in the previous chapter. The second is placed higher than the larynx, since it is seen when we open our mouths in the space which exists between the foramina of the nostrils and the larynx, one glandule being placed at each side, in form and characteristics very similar to a gland indeed. It corresponds very much in structure to other glands, but is much looser, and in this respect distinguished that it forms the saliva and moistens the aspera arteria and the esophagus together with the whole extent of the mouth." It seems probable, from what follows, that he had observed the parotid gland, but had supposed it to be co-terminous and identical with the faucial tonsil. His third kind of glands was apparently the cervical lymph nodes.

The Intermaxillary Bone.

"Glands" of the Throat.

His reference to the cartilages of the larynx is rather amusing as indicative of his weariness of the clamor of those who believed anatomy better studied in the work of Galen than in that of the Almighty. We have seen that Berengar had already pointed out that there are two arytenoid cartilages. Vesalius repeats the as-

* "Anatomia," Lib. IV, cap. 8; Edit. 1666.

† "De Humani Corporis Fabrica," Lib. I, cap. 9, p. 248; Edit. Basel, 1555.

sertion of Galen that the larynx is made up of three cartilages but he asserts that when you take off the membrance of this region you will find there are two arytenoid cartilages, but for the sake of pleasing those who follow the old anatomists in enumerating the cartilages of the larynx as three in number* without describing them, he will consider this as a double cartilage. He defines the glottis as the space between the processus vocales and confines the word epiglottis to its present signification, correcting and criticising the errors and confusion of the prae-Renaissance and mediaeval doctors in this respect, though he shared the error of Galen as did all those who followed him until the nineteenth century in supposing it is the epiglottis which prevents fluids from entering the larynx in large amounts.† It seems singular that Vesalius who dissected the human body should have ascribed to it the muscles elevating the epiglottis in animals‡ while Galen, whom he charges with having only dissected animals, fails to mention these muscles in man, in whom they do not exist. He thus added two muscles to Galen's category of twelve, describing them as almost round, having their origin on the internal surface of the hyoid bone and being inserted at the foot of the operculum or epiglottis. In regard to the uvula and soft palate he does not differ materially from Galen. He repeated the latter's vivisection experiments on the recurrent laryngeal nerve.

Neither he nor Berengar, nor indeed hardly any early anatomist of great note, escaped the charge of human vivisection. With Vesalius, perhaps, this hackneyed accusation gave rise to the story that in expiation of this sin he made the journey to the Holy Sepulchre, dying from shipwreck and disease on the return voyage in 1564. The latter fact seems well established, but whether he had been making an expiatory pilgrimage or not, at least for this purpose, seems very doubtful.§

Anatomical Plates of Vesalius.

As has been said, the times furnished a host of anatomists. None, however, surpassed Vesalius, despite his errors, and no anatomical work has ever been published before or since, equalling or even approaching the artistic merits of his magnificent plates, which to be appreciated must be seen in their original reproduc-

* It will be noted that Berengar speaks of the cartilages of the larynx as five in number. He included the epiglottis as we do and made the arytenoids two. Other anatomists, Vesalius among them, speak of the larynx as being made up of three or four cartilages, according as they regarded the arytenoids as single or double. Aristotle had said the epiglottis belongs to the tongue.

† (l. c. Lib. I cap. xxxviii.)

‡ (Lib. II cap. xxi.)

§ Roth: Andreas Vesalius Bruxelliensis. 1892.

tions. Indeed, as Roth says: "In the illustrations lies the fiery stimulation and power of his anatomy." Of course as to accuracy there may be much to criticise at present, but even in this they were far in advance of anything hitherto seen. So striking are they, that they were at one time ascribed to the pencil of the immortal Titian, and undoubtedly they resemble the impress of his genius left upon his more authentic productions. The identity of the artist has never been established, a fact in itself suggestive of the unrivalled artistic development of the epoch when Titian (1477–1576) in his long life, or Michael Angelo, who died in the same year as Vesalius, might have traced their outlines. In Grimm's life of Michael Angelo we find it said that Colombo, who was older than Vesalius (1490–1559), made his friend, the great artist, whose passion was anatomy, a present of the body of a young negro for dissection. It was Colombo, who according to Sprengel was the first to give a good description of the ventricles of the larynx. He also experimented on the action of the recurrent nerves. He is said to have antedated Servetus* in the discovery of the pulmonary circulation. Vesalius had made the mistake in the Epitome of the Fabrica of describing an internal constrictor muscle of the aperture of the nares, and in this error he was followed many years later by Thomas Bartholinus. Colombo denied this statement and showed that such a muscle did not exist. He in his turn made a mistake in describing the cartilages of the larynx as being of the nature of bone, having apparently noted the ossification frequently found in old people. This was corrected by Laurentius (or Dulaurens)† and Casserius.‡ Colombo speaks of the superior maxillary bone as the os ampullosun on account of the sinus.§

The Pulmonary Circulation.

Valverda, a Spanish pupil of Colombo, corrected Vesalius' mistake as to the muscles of the epiglottis, although his work is largely a transcription of the great Fabrica. Another Spaniard, high in favor with Phillip II, who obtained for him an important appointment in Sicily (1563), was Ingrassias, who was the first to describe the

* "The first description of the pulmonary circulation was published by Servetus in his 'Restitution of Christianity,' 1553, and the same theory was contained in the MSS. copy sent to Calvin at the end of 1545 or beginning of 1546. The reformer refused to return the manuscript and lay in wait for seven years to slay its author" (Whittington). He burned him, but it is only fair to Calvin to say that he made no use of his great discovery.

† "Historia Anatomica," 1578 (Trans. by Size p. 1179).

‡ "De Vocis Auditusque Organis," 1600.

§ "In Re Anatomica." I have derived my extracts from this author, as well as those which follow from Ingrassias and Valverda, second hand from many sources, the originals not being at my disposal. Colombo was the friend, pupil and successor of Vesalius in the chair of Anatomy at Padua, though apparently much older than the latter.

anterior ethmoidal cells and likened the structure of the bone to pumice-stone. (Cloquet.) Colombo and Ingrassias both described the inferior turbinated bones, but Casserius a little later (1610)* described them all, and gave them their present name. There are, he says, hidden in the depths of the nostrils "oblong little bones which may be called spongy, and seem like the steps of a ladder, because one is placed above the other. 'Cuculla,' some call them, I know not through what comparison, unless perchance they wish to liken the two superior to a hood which, however, I would rather compare to the Concha Veneris. Hippocrates not inaptly calls them sleeves. Turbines I would call them from their form and function. They are bones, not cartilages. Turbinated bones (Turbinata Ossa) they are rightly called. They are usually three in number, indeed this many at least always." The Turbinated Bones.

In the "De Usu Partium"† Galen asserts that the bone in this region would better be called spongy than like a sieve (ethmoid), the term applied to the whole bony structure of the internal nose by Hippocrates‡ but as for the turbinated bones as distinct parts, neither Hippocrates or Galen, so far as I see, betray any knowledge of them. The illustrations Casserius gives of them are very poor. He alludes to the cavities of the turbinated bones, evidently meaning thereby the ethmoid cells. The use of the turbinated bones, he says, is to break the force of the entering air and warm it and cleanse it, which as to the nose, we have found in Galen. Bauhinus (l. c.) refers to these authors and says that the turbinated bones fill the cavity of the nose, and are liable to be eroded in syphilis, and he described the anatomy of this region in animals.

A treatise by Fabricius§ in 1600 contains very good chapters on the structure and functions of the larynx, but in this he was later surpassed by his pupil Casserius. Anatomy of the Larynx.

The work of Casserius on the Organs of the Voice and Hearing is a most exhaustive and admirable disquisition on the anatomy and physiology of the larynx and ear, comparative anatomy of the parts being there very fully described and pictured in finely executed plates. He gives an elaborate description of the laryngeal muscles.‖

* "Pentæsthesion."

† (Lib. VIII, cap. 7).

‡ (De Locis in Homine) (De Carnis).

§ "De Visione, Voce, Auditu, Tractatus." Fabricius ab Acquapendente.

‖ Vesalius, Fallopius, Colombo, Casserius and the other early anatomists had very faulty ideas as to the actions of the intra-laryngeal muscles. Owing to the complexity of their mechanism this is not to be wondered at. Indeed even yet there is much room for difference of opinion and discussion. I would refer the reader to Holmes' History of Laryngology and especially to his treatise on the Voice for a more extensive and accurate description of this difficult matter than I am able to give here.

Fallopius was a man of fine character and great originality of research, to whom medicine owes much. He was the first to separate the glosso-pharyngeal and describe it as an independent nerve, it having been previously, together with the spinal accessory, which Willis subsequently described, considered as a part of the vagus.* He speaks also of the nasal recurrent branch of the fifth pair of nerves. He devotes more attention to the description of the ethmoid bone than does Vesalius. Besides his numerous and valuable observations on the internal ear he describes the lachrymal bones and the lachrymal duct. Fallopius correcting Vesalius declared he was able to find the hyo-epiglottic muscle only in the ox. He gives a tolerably accurate description of the pharyngeal and palatal muscles. While Galen speaks of but one pair of muscles for the palate and fauces, Fallopius differentiates them into three pairs and Bauhinus into four. Vesalius and Colombo had followed Galen in believing the removal of the uvula has an injurious effect on the voice, but Bauhinus† reports a case in which it was entirely removed without causing any inconvenience.

It is to Bauhinus (l. c.) much in the modern nomenclature of anatomy is due, especially as to the muscles. Galen had named the digastric, but in Bauhinus we note the sterno-hyoid, the genio-hyoid, the crico-arytenoideus posticus, etc., etc. He also was very copious in his references to the works of others. He was accused of a lack of originality, but the care he took to quote his authorities, a thing seldom done before him except in the way of criticism, was perhaps partially the cause of this singling him out from others less conscientious. He adds a comment to the statement of Galen, in regard to some of the liquids in the act of swallowing passing into the larynx, which is an indirect criticism of some conceptions which still linger with us. "For certainly unless something flows along the walls of the air tube in affections of the chest, ecclegmata, syrups and tablets are prescribed in vain." Bauhinus' idea of the tonsils was the same as that of the previous writers from whom we have quoted. Even Casserius in describing the pyriform sinuses,‡ which he calls cavernulæ, ascribes to them the function of holding for awhile a certain portion of the liquid on swallowing which by gradually gliding down the walls of the larynx keeps them moist and lubricates them. One must keep in mind the necessity of accounting for the normal moist condition of the mucosa in the absence of any knowledge of the functions of the racemose glands. Laurentius (l. c.) indeed speaks of having occasionally noted glands in the mucosa of the larynx, but their nature was evidently unknown to him and his contemporaries. I have thus far met with no mention of similar structures in the nose.

* Observationes Anatomicæ. 1561.
† Theatrum Anatomicum 1621 III. LXXXIII.
‡ For an extended history of the valleculæ and sinus pyriformes see A. Rosenberg "Arch. f. Laryng ," Bd. 10, hft. 3, p. 419.

SOME OF THE BACTERIA FOUND IN THE NOSE.*

BY SAMUEL IGLAUER, B.S., M.D., CINCINNATI, O.

It has long been a disputed question as to whether or not the normal nasal mucus contains bacteria. This is due to the fact that there has been no uniformity in the results obtained by various examiners at different times. Some observers have maintained that the nose always contains bacteria, while others have held that it is a comparatively sterile area.

Upon *à priori* grounds, one would suppose that the nasal mucus swarms with bacteria, for the inspired air contains micro-organisms in great numbers. It has been estimated[1] that a person breathing the London atmosphere inspires from 1,500 to 14,000 germs per hour.

In view of the accepted fact that most infections come either through alimentary or the respiratory tract, it is important to determine *what becomes of the inspired bacteria. Where are they arrested? What is their fate?*

It was Lister[2] who, as early as 1868, established the fact that injuries of the chest, with the escape of blood and air into the pleural sac, would not become empyemata; as long as there was no perforation of the chest wall, and the air which entered the pleural cavity came from the torn lung alone. This he attributed to the filtering action of respiration. By bacteriological methods, others[3,4] have since shown that trachea and alveoli are usually sterile.

Having thus disposed of the inspired air, we must next consider the expired air.

Tyndall[5] showed that the expired air was dust-free, and it remained for Straus[6] to prove that it was germ-free. "On the average," says Straus, "of 609 germs or spores which enter the lungs with the inspired air, one alone comes out with the expired air. 'Hence the frequent failure to find the cause of disease in the exhalations.'" The following observation is unique: "Men or animals confined in a space, far from contaminating the air, tend to purify it, bacteriologically speaking."

To recapitulate: First, we inhale innumerable bacteria; second, the lower air passages and lungs contain few, if any, bacteria;

* Read at the Sixth Annual Meeting of the Western Ophthalmologic and Oto-Laryngologic Association, at Cincinnati, April 11, 1901.

third, the expired air is practically germ-free. From these facts it appears evident that the nasal fossæ and the pharynx must be the depot for the inspired microbes. Let us now see how the more recent researches on this subject agree with this theoretical conclusion. A review of the literature will show that two schools have arisen, the one claiming that the nasal mucus contains numerous and various micro-organisms, the other maintaining that it is comparatively sterile.

In 1889 Wright[7] removed the nasal secretions with the loop of a long platinum wire from persons as nearly normal as possible. Besides non-pathogenic forms he found the staphylococcus in six of the ten cases he examined.

Von Besser[8] examined the nasal secretions of fifty-seven men, twenty-eight of whom were convalescents, while the remainder were healthy persons, some of whom worked in a bacteriological laboratory. He found thirteen varities of organisms, including the

Streptococcus pyog.	7 times
Mcr. liq. alb.	22 times
Friedländer's bac. pneum.	twice.
Staphylococci	14 times
The Diplococ. pneum	14 times

Paulsen[9] found numerous microbes in the nose. His procedure was to dilate the nostril, and, after illuminating, to scratch away from the middle and inferior turbinates and the floor of the nose. Eleven of his sixty-four plates remained sterile, nineteen showed ten colonies, the remainder one hundred or more colonies. He found but one pathogenic variety, *i. e.*, one plate showed eighty colonies of streptococci.

Weichselbaum[10] says the pneumococcus is found in the nasal and salivary secretions of many healthy persons. Würtz and Lermoyez[11], in 1893, collected mucus by introducing sterile tampons into the nasal cavity. They say that, after rejecting the first few drops, "the nasal mucus, which one has obtained by stimulating a healthy mucus membrane, does not generally contain any microbes." To account for this, they set up the doctrine that mucus has bacteriacidal power and experimentally proved this to be true as regards the bac. anthracis. They also made a preliminary statement that upon nearly all pathogenic organisms its action is exerted in the same direction, but in different degrees. Of subsequent observers, but one, Piaget,[12] is inclined to confirm this theory of the bacteriacidal power of mucus, while four experimentors,[13] [14] [15] [16] in as many countries, refute this theory. One[16]

goes so far as to show that germs increase in virulence in a mixture of mucus and distilled water, and another[15] was able to grow bacteria in mucus after they had been in it for several days. The work of StClair Thomson and Hewlett,[17] for a time, seemed to settle the question in favor of the sterility of the Schneiderian membrane. Whenever they took their cultures from the vestibule of the nose they obtained abundant colonies. On the other hand, when they innoculated their plates (agar) from the Schneiderian membrane, removing the mucus, with great care not to touch the vibrissæ or the vestibule, they found eighty-four per cent to remain sterile. They suggest that previous observers, who did not avoid the vestibule in taking their cultures, may have obtained positive results by contamination from this source.

Acting upon this suggestion, Park and Wright[14] repeated the work done by the latter in 1889, and found thirty, out of thirty-six, plates positive for bacteria.

Klemperer,[15] in Germany, also made the statement that the nasal cavity always contains bacteria, and refutes the work of Thomson and Hewlett.

In Italy three observers[16 18] not only find organisms, but classify them, and find numerous pathogenic as well as non-pathogenic forms.

Fränkel,[19] exploring the antrum of Highmore in twenty-eight cadavers, with normal sinuses, found thirteen to be sterile. In the inhabited cavities he found one or more of the following varieties:

Diplococc. lanc.,
Staph. pyog. flav.,
A diphtheria-like germ.
Bac. mucos. capsulatus.
Bact. coli; and
An anthrax-like germ (non-path.)

He concludes that a large number of healthy sinuses contain micro-organisms which play an important role in the disease.

I now wish to give the results of my own observations made in the year 1900 in the Pathological Institute in Vienna, with the encouragement and under the guidance of Docent M. Gohn and with the approval of Prof. Weichselbaum.

The prime object of this work was to search for the diplococcus intracelluliaris meningitides and for the influenza bacillus in the cadavers of persons who had not had either disease. Thirty-four cadavers were examined. The bodies had previously been kept

TABLE I.

CULTURES.

Case No.	Age.	Cause of Death.	Hours after Death.	Various Forms in Smear Preparation. Gram Method.		Staphylococcus Pyog. Aur.*	Staph. Pyog. Alb.*	Coli Group.	Diplococ. Pneumon.*	Streptococci.*	Pseudo Diph Group.	Bac. Pyocyaneus.	Capsul. Bac. Group.	Bac. Influenza.	Subtitis Group.	Yeast.	Varieties of Unidentified Colonies.
				Cocci.	Bacilli.												
1	49 yrs.	Embolism Art. Pulm	23	0	0		s.			v. a.							
2	87 yrs.	Prog. Paralysis	8½	2		a.			s.								
3	37 yrs.	Mitral Lesion, Gastro-Enteritis, Peritonitis	26½	1	2	s.		v. a.	a.	a.	a. f.						1 cocci
4	73 yrs.	Senility, Decubitus, etc.	14		3			v. a.			a. f.						2 cocci bac.
5	67 yrs.	Ruptured Aneurism Aortæ	24(?)	0	0	r. a.	a.		s.	s.							
6	53 yrs.	Thyroid Tumor, Tracheotomy, Pneumonia	5½	3	2		a. f.		v. a.								
7	37 yrs.	Glioma Brain (Bronchitis)		2	1		a. f.		a. f.								
8	51 yrs.	Sarcoma-Humeri, Extirpation (Emphysema)	16½	3	1	v. a.	r. a.		a.	a.					s.		1 bac.
9	57 yrs.	Frc. Bas. Cran. Cron., Hyd'ceph. & Chron. Lep'mngtis		0	0												1 coli (?)
10	2 mo.			3	2	a.		v. a.									
11	63 yrs.	Carc. Cordiæ	4 to 8	2	2	a. f.			v. a.								1 (bac.)
12	69 yrs.	Carc. Rectum (Emphysema)	8¼					v. a.									
13	75 yrs.	Contusion of Spine		1	1			r. a.									1 cocci
14	35 yrs.	Fractures	23½	1	2	r. a.		r. a.									1 bacilli
15	1 mo.	Chr. Enteritis, Bronchitis		2	1					r. a.		r. a.					
16	1 mo.	Catarrh of Bowels, Inanition		2	3	s.		s.							s.	s.	
17	49 yrs.	Carc. Bladder, Emphysema		0	0	a.		r. a.									
18	43 yrs.	Dementia Paralytica	25	1	1		v. a.						a.				
19	40 yrs.	Prog. Paral	10½		1	a.					r. a.	a.					
20	37 yrs.	Epilepsy	23½			a. f.			r. a.	r. a.							
				23	22	11	6	8	8	6	3	2	1	1	1	1	8

Explanation of Abbreviations: a., abundant; r. a., rather abundant: v. a., very abundant; a. f., a few; s., several.

* The identification of these forms was only partial and therefore is not positive.

TABLE II.

Case No.	Age.	Pulmonic Condition. (Usually a Complicating Condition.)	Hours after Death.	Various Forms in Smear Preparation.		Staph. Pyog. Aureus.*	Staph. Pyog. Alb.*	Coli Group.	Diplococcus Pneumonia.*	Streptococci.	Pseudo Diphtheria Group.	Capsul. Bacillus Group.	Varieties of Colonies Unidentified.
				Cocci.	Bacilli.								
1	55	Pneumonia	17	3	2	v. a.	.....	r. a.	a.	a.	a.	.....	.....
2	27	Pneumonia	10	1	.....	.....	r. a.	s.	a. f.	a. f.	.....	.....	2
3	49	Tuberculosis	25	1	1	.....	.....	s.	.....	.....	.....	.....	.....
4	52	Pneumonia	29¼	.....	.....	.....	s.	v. a.	.....	v. a.	.....	.....	.....
5	23	Tuberculosis	5½	1	2	v. a.	.....	.....	a.	.....	.....	.....	1
6	48	Tuberculosis	6½	1	2	a. f.	a. f.	.....	v. a.	.....	.....	.....	1
7	45	Tuberculosis	10	2	2	.....	s.	.....	r. a.	.....	.....	.....	.....
8	33	Tuberculosis	24	1	1	.....	.....	a.	.....	.....	.....	.....	.....
9	61	Anthrocosis	28½	1	2	a. f.	a. f.	.....	a.	a. f.	.....	.....	.....
10	47	Pneumonia	.....	1	.....	.....	r. a.	.....	v. a.	.....	a. f.	a. f.	.....
11	67	Pneumonia	9¾	1	.....	.....	v. a.	s.	a. f.	a. f.	.....	.....	1
12	22	Tuberculosis	21¾	1	3	a.	.....	.....	.....	s.	.....	.....	1
13	51	Pneumonia	24½	1	3	s.	.....	.....	.....	.....	.....	.....	1
14	50	Tuberculosis	29	1	1	r. a.	r. a.	.....	.....	.....	.....	r. a.	1
.....	.....	.....	.....	16	19	7	8	6	8	6	2	2	8

Explanation of Abbreviations: v. a., very abundant; a. f., a few; s., several; r. a., rather abundant; a., abundant.

* The identification of these forms was only partial and therefore is not positive.

in the cold cellar prior to the examination. The examination was made as soon after death as possible. After the brain had been removed in the usual manner a transverse cut was made through the base of the skull in such a way that it extended into the pharynx and exposed the posterior nares.

A sterile platinum loop was then introduced into the posterior nares, and with it mucus was removed from the nose. The first drop was used for smear preparations. The loop was re-introduced from one to three times, and the mucus thus collected was mixed with a few c.c. of sterile bouillon. From this bouillon mixture three plates were immediately innoculated, *i. e.*, one agar plate, one serum-agar plate and one blood-agar plate.

The smear preparation was stained according to Gram and examined for bacteria.

After twenty-four to forty-eight hours the plates were removed from the incubator and the colonies identified as nearly as possible. These observations differ from those previously quoted in that the cultures were taken from the posterior nares of the cadaver. Appended is a table showing the findings in twenty selected cases:

A summary shows that the staphylococcus pyog. aur. was present in eleven of the twenty cases, the styph. pyog. alb. in six of the cases, the diplococcus pneumonia (Fränkel-Werchselbaum) and the Coli group were each represented eight times; the streptococcus pyog. in six of the cases; pseudo-diphtheria group, three times. The influenza bacillus, the subtilis and the B. capsulatus group and the yeast plant were each found in one of the cases. The bacillus pyocyaneus was found in two of the cases. Besides these, eight unidentified forms were noted. Thus a *total of nineteen varieties was found.*

No experiments were made as to pathogenicity for animals. (Note the * starred varieties in the table.)

The additional fourteen cases of the thirty-four showed some marked pulmonic lesion, and hence are given in a separate table. (The pulmonic condition was not the cause of death in most of these cases.)

My findings agree closely with those of Von Besser,[8] Malato[16] and Wright[7] on the living subject, and with Fränkel's[19] results on the normal antrum in the cadaver. The fact that Fränkel found the antrum sterile in a number of cases (thirteen out of twenty-eight) may be explained by the slow diffusion of the air through its small ostium.

Another method of investigating this problem has been by killing animals and examining their nasal fossæ immediately after death. Working according to this method, Hildebrant[8] found abundant microbes; Piaget found fifteen out of thirty-eight cavities sterile[12]; Fermi[18] found a scant development of microbes and now and then a sterile plate; while Park and Wright[14] found (in two cases) numerous colonies. It will be seen that a majority obtained positive results.

In order to reconcile these varying observations in the endeavor to reach a definite conclusion, a brief review must be made.

In 1895, the English observers, Thomson and Hewlett,[17] made their oft-quoted statement, that the Schneiderian membrane was usually sterile, and that the vestibule was always infected; and suggested that those observers who had positive results may have removed some organisms from the vestibule in taking their cultures. Working in the full light of this objection, Park and Wright[14] have come to the conclusion that the nasal mucus usually, and Klemperer[15] that it always contains microbes. Two Italian experimentors,[18] familiar with the Englishmen's work, nearly always found the human nasal fossæ inhabited.

In addition to this, Malato[16] and Jones[20] have each removed with the mucus, organisms pathogenic for animals, and the writer has found the posterior nares of cadavers are always positive. Piaget[12] alone, has upheld the sterility theory. The experiments upon animals have often shown bacteria.

The positive findings overwhelm the negative results; the weight of evidence is *strongly to the effect that the normal nasal mucus contains bacteria.* However, the flora of the nose can not be as abundant, as we would suppose from the number of bacteria inspired; for the following reasons:

1. The surface over which the bacteria are scattered is rather large. From measurements I have made I find it to be about 154 sq. cm. in the nose, and 25 sq. cm. in the naso-pharynx.

2. A certain number of bacteria must reach the naso-pharynx from which they are swallowed and digested.

3. The flow of mucus and serum, together with gravity tends to carry away the germs. P. and W.[14]

4. The nasal mucus is not a good culture medium. P. and W.[14]

5, and most important. The organisms which have lodged in the nose are expelled by the ciliated epithelium with great rapidity, [1 14], etc. This action has been measured in the frog as at the rate of one inch per minute.[1]

6. A recent work[16] seems to show that the nasal epithelium has bacteriacidal power.

The practical conclusions to be drawn are:

1. It is advisable to sterilize the vestibule of the nose before operating.

2. After operations the nostril on the operated side should be closed with a piece of cotton to act as a filter.

3. Plugging of the nasal cavity after operations is, as a rule, inadvisable, as it tends to retain the nasal secretions.

4. Nasal wounds do not heal by first intention, owing to the presence of bacteria. This also explains the occurrence of secondary hemorrhage.

5. Fever after operations[21] [22] and the few deaths[23] recorded, have probably been due to the presence of pathogenic micro-organisms in the nose.

BIBLIOGRAPHY.

[1] Thomson and Hewlett: *Lancet*, 1896, vol. i.

[2] Lister: *British Med. Journ.*, July 18, 1868.

[3] Hildebrandt: *Berträge zur Path. Anat. und Physiol.*, Ziegler & Nawerk, 1887, Bd. ii, p. 413.

[4] Thomson and Hewlett: *Lancet*, 1896, vol. i.

[5] Tyndall: "Philosophical Transactions of Royal Soc.," vol. clxvi, part i, 1876, p. 27.

[6] Straus: *Annals d' l'Institut. Pasteur*, 1888, No. 4.

[7] Wright: *New York Med. Journ.*, July 27, 1889.

[8] Von Besser: *Centralblatt für Bacteriol.*, Bd. vii, No. 5, 1890.

[9] Paulsen: *Centralblatt f. Bakt.*, vol. viii, 1890.

[10] Weichselbaum: *Wien. Med. Wochenschrift*, 1890.

[11] Würtz and Lermoyez: *Annals des Mal. d l'Oreille*, etc., August, 1893, No. 8.

[12] Piaget: *Journ. of Laryngol.*, 1897, p. 280.

[13] Thomson and Hewlett: *Lancet*, 1896, vol. i.

[14] Park and Wright: *Journ. of Laryngol.*, vol. xiii, 1898.

[15] Klemperer: *Münchener Med. Woch.*, August, 1896.

[16] Malato: *Archivis Ital. di Otologia*, 1897, vol. vi, fase 4.

[17] Thomson and Hewlett: *Medico-Chirurg. Trans.*, vol. lxxviii, 1895.

[18] Fermi and Brettschnider: *Archivis Ital. di Otol.*, 1896, vol. iv. fase 1.

[19] Fränkel: *Arch. für Path. Anat.*, 1896, Bd. xliii.

[20] Jones: *Med. Record*, August 25, 1900.

[21] Holmes: *N. Y. Med. Journ.*, September-October, 1900.

[22] Winkler: *Journ. of Laryngol.*, vol. xiii, 1898, p. 209.

[23] Wertheim: *Journ. of Laryngol.*, 1898, p. 251.

EDEMA OF THE LARYNX.*

H. E. SMYTH, M.D., BRIDGEPORT, CONN.

It is my intention in this paper to refer more particularly to those cases which have either some insignificant or undiscoverable origin.

It is quite possible to have laryngeal edema from any cause, however slight, capable of producing local irritation. Moritz Schmidt[1] has mentioned perhaps the simplest of all, an injury from a hard crust of bread, a circumstance which might easily be forgotten.

Among the more common causes may be mentioned traumatism, foreign bodies, irritating vapors and corrosive poisons, or we may have secondary edema in syphilis, tuberculosis, diphtheritic infection, or any disease of the larynx.

Angio-neurotic edema is an affection which manifests itself externally, but may invade the larynx. It is of an hereditary character, and seen in neurotic individuals.

Laryngeal edema is called typical when it occurs primarily in the larynx, consecutive when it is preceded by some other laryngeal affection, and contiguous when it extends from an adjacent part.

The term passive edema has been applied to those cases in which the laryngeal swelling is simply a part of a general anasarca.

There have been many writers upon this subject, perhaps the most prominent being Sestier[2], whose writings in 1852 have been extensively quoted.

The most recent observer to tabulate cases is Dr. C. C. Rice,[3] who included all cases reported in ten years from 1887.

Since that time cases have been reported from various causes, as Anesthesia by England[4], Angio-neurotic by Damieno[5], Uticaria by Taylor[6], Climacteric by Uchermann[7] and Catarrhal by Clark[8].

There are many opinions in regard to primary edema of the larynx, no less an authority than Mackenzie[9] being responsible for the statement that he believes "in nearly all the instances of so-called simple inflammations, the disease is due to blood poisoning, and in every case seen by him an opportunity for infection had been present." Dr. Rice[10] remarks that although the cause of many of the cases classified is given as catarrhal, he believes it to be quite possible that diphtheritic infection has not been satisfactorily excluded, nor the heart and kidneys examined.

* Read before the Bridgeport Medical Association, June 4, 1901.

Rosenberg[11] credits Peltesohn with the opinion that an edema secondary to an inflammation more deeply situated may mask the primary condition.

There is without doubt a cause for all cases of edema of the larynx, as is true of all other affections, the terms primary and idiopathic being applied to those cases where the cause is undiscernable.

I think Lennox Browne[12] in his excellent chapter on the subject aptly states the case when he says: "It cannot be denied, however, that acute edematous laryngitis frequently occurs as an apparently primary affection."

The diagnosis of the disease is not difficult, and is always to be suspected in a sudden obstruction to the respiratory functions, especially in an adult. The patient appears anxious, restless and possibly cyanotic. The voice may be much affected and deglutition very painful. The local appearances are characteristic, the globular semi-translucent swellings on the lingual surface of the epiglottis, the ary-epiglottic folds, or ventricular bands, cannot be mistaken.

Bosworth[13] describes the course of the disease as follows: "The tumefaction of the ary-epiglottic folds extends downward to and involves the ventricular bands, the membrane covering the arytenoid cartilages and the commissure, while in front the edema, starting on the posterior aspect of the epiglottis, mounts to the epiglottic crest and passes over, and is liable to extend as far as the glosso-epiglottic fossæ."

Hajek, of Vienna, on the contrary, teaches in his clinic, that, owing to the intimate relation between the mucous membrane and cartilage, and the entire absence of sub-mucous tissue on the posterior surface of the epiglottis, edema in that location is impossible, and bases his opinion upon attempts to artificially produce the affection in anatomical preparations, by sub-mucous injections. He also shows the presence of definite natural limitations, which offer a greater or less resistance to the extension of edema in the larynx.

The following case which came under my care has many points of interest. N. G., Hebrew, pawnbroker by occupation, forty-four years of age, weighing 162 pounds, came to me early on May 25, 1900, complaining of pain in his throat. He was a moderate smoker, temperate in regard to alcoholics, and had a negative personal and family history. On examination there seemed a marked discrepancy between the objective and subjective symptoms, for beyond a slight catarrhal pharyngitis and laryngitis, nothing was found to account for the symptoms which seemed to depend largely upon the

well-known susceptibility of the race to anxiety in sickness and a possible rheumatic element. Sodium salicylate was given with the assurance of an early recovery. On the following day I was called to his home and was struck by his changed appearance, his breathing being noisy and disturbed, his voice very difficult to understand and great pain manifested on swallowing. An external examination revealed nothing more than some tenderness over the region of the larynx, but internally both arytenoid cartilages and ventricular bands were represented by large edematous swellings, the epiglottis being unaffected. The vocal cords were barely visible through the small opening into the larynx and seemed to move freely. The usual remedies were employed, including ice and pilocarpine, but to no purpose, the swelling increasing until a few hours later a view into the larynx was impossible, and respiration greatly impeded.

Free scarification of the swellings was practiced with considerable relief, but on May 30th, five days later, tracheotomy was required. The operation was made necessary by a fixation of the cords in the adducted position rather than an increase of the swelling. This fixation is due according to Lennox Browne[14] to a paralysis of the posterior crico-arytenoid muscles from serous infiltration. The tube was removed on the sixth day, after which the patient made an uninterrupted recovery. There still persists, a year later, a fixation of the right cord in a position a little to the right of the median line, but the defect is remedied by the free movements of the left cord, only a slight occasional huskiness remaining. The patient's physical condition is, as before the illness, all that can be desired.

In regard to the treatment, it may be interesting to note that suprarenal extract was tried with no appreciable effect. It has been recently highly recommended by Somers[15] who reports a case of edema of the larynx as undoubtedly cured by it, and by Bates[16], who mentioned several such apparent cures. I can hardly see why suprarenal extract should reduce an edema, but should expect it rather to hinder absorption from the sub-mucous tissues. Somers[17] himself in another article says: "It prevents to a marked extent the toxic effect of local anesthetics by retaining them in the tissues and preventing absorption."

Scarification, in the experience of Shurly[18], has never been attended with good results. It is recommended by most writers, however, and seemed to be the only treatment employed in this case with benefit.

Although I have never seen it so stated, I cannot but believe that a perichondritis might accidentally be excited by its employment.

Having treated this patient a month previous to his illness for a slight ear trouble, I had ample opportunity to know that he was free from chronic disease of the larynx. The ear affection was non-suppurative and offered no opportunity for infection. The heart and kidneys were examined and found normal. There was at no time any evidence of diphtheritic infection, and practically no constitutional symptoms until the first few days following the tracheotomy.

Moritz Schmidt[19] believes potassium iodide to be responsible for many cases of edema of the larynx, and states that small doses seem more liable to cause the disease than large, the symptoms subsiding rapidly on the discontinuance of the remedy.

This patient had taken ten grains daily in divided doses, but as the remedy had been discontinued several days before the illness, it could not have been a cause, even were it possible to produce such dire results, with so small a dose.

While the extreme rarity of an edema of the larynx due to catarrhal conditions cannot be denied, in the absence of a more definite cause, I accept as the etiological factor in this case a simple acute laryngitis.

27 Courtland street.

BIBLIOGRAPHY.

[1] Schmidt: "Die Krankheiten der oberen Luftwege." Page 346.
[2] Sestier: "Traité de l'angine Laryngée Œdémateuse." Paris, 1852.
[3] Rice: *N. Y. Med. Journal*, December 3, 1898.
[4] England: *Montreal Med. Journal*, May, 1899.
[5] Damieno: *Archivi Italiani di Laringologia*, July, 1898.
[6] Taylor: *Philadelphia Med. Journal*, April 2, 1898.
[7] Uchermann: *Med. Review of Reviews*, October 25, 1898.
[8] Clark: THE LARYNGOSCOPE, February, 1899.
[9] Mackenzie: "Diseases of the Pharynx, Larynx and Trachea." Page 201.
[10] Rice: *N. Y. Med. Journal*, December 3, 1898.
[11] Rosenberg: "Die Krankheiten der Mundhöhle, des Rachens und des Kehlkopfes." Page 235.
[12] Browne: "The Nose and Throat and Their Diseases." Page 468
[13] Bosworth: "Diseases of the Nose and Throat." Page 647.
[14] Browne: "The Nose and Throat and Their Diseases." Page 475.
[15] Somers: *Merck's Archives*, May, 1901.
[16] Bates: *The Journal of the American Medical Association*, August 11, 1900.
[17] Somers: *Merck's Archives*, June, 1900.
[18] Shurly: "Diseases of the Nose and Throat." Page 69.
[19] Schmidt: "Die Krankheiten der oberen Luftwege." Page 344.

IODATED MILK (SCLAVO) IN RHINO-LARYNGEAL THERAPEUTICS.

BY PROF. GHERARDO FERARRI, ROME, ITALY.

In persons suffering from reflex symptoms of nasal origin, particularly asthma, it is known by all that iodine preparations, and especially iodide of potassium, in high doses, does much to alleviate and retard the attacks and sometimes make them cease entirely. It is equally true that the retained characteristic odor of atrophic rhinitis (ozena) may be modified or diminished in intensity by the administration of sufficiently high doses of iodide of potassium, in such a manner as to saturate the organism and produce the fetid iodic coryza.

For this reason the proposition of Sclavo to use in these cases subcutaneous injections of iodated milk in preference to the treatment pursued by the way of the digestive tract was favorably received. With a Roux syringe used for two days in all rhinitis accompanied either by ozena or reflex nervous disturbances, a subcutaneous injection, on the abdomen or over the scapula, of 10 c. c. of iodated milk containing 0.05 gram. of iodine prepared by Prof. Sclavo at his institute of experimental hygiene of the Royal University of Siene. The treatment is very well borne, without any local reaction, the patients merely stating that for a minute or two after an injection they have a strong taste of iodine in the mouth.

In my practice I have observed the effect, after ten to twenty injections, of completely preventing the attacks of reflex asthma of nasal origin and of causing a diminution, in a most marked manner, of the retained odor of atrophic rhinitis, which intensity does not manifest itself under intense injections in the entire Schneiderian mucosa, thus leading to a better chance of treating locally.

The satisfaction obtained by the good effects in atrophic and vasomotor rhinitis with the hypodermic injections of iodated milk led to the conclusion that it would not be a matter of experiment in other lesions of the upper part of the air passages, especially of the larynx, in which local treatment cannot be entirely sufficient to repair the total loss of substance to modify deeply textures to favor resorption of exudates. Upon this vital point I wished to submit to the injections of iodated milk a patient affected for a long time with a rheumatic (a fijore) left crico-aretynoid synovitis or arthritis.

In this case a laryngoscopic examination showed a voluminous edema of the left aretynoid mucosa, which occupied the entire opening of the larynx.

The mucous membrane so markedly smooth, but of a sub-cyanotic color, presented a certain degree of hardness and rigidity to pressure with a probe. The left half of the larynx remained perfectly immobile in movements of respiration or phonation. The marked symptoms of the patient were accentuated in phonation and in sudden coughing, when he wished to raise his voice or breathe a little in a hurry, or swallow liquids before he thought.

Well, the iodated milk at the fifth injection already revived as well as reduced by half the inflammatory tumefaction in the left crico-aretynoid articulation, being rid of which there remained anew the entire right half of the larynx, appearing perfectly healthy, as also the anterior third of the right vocal cord. After ten injections the edema was reduced to a minimum size and a marked rigidity of the crico-aretynoid articulation alone persisted. The patient was then advised to complete his second course of treatment at Salsomaggiore.

The method of Sclavo is similar to that of Durante, in so much so that it will give rise to the question as to which is the prior one. Now, in my opinion, iodated milk, from a practical point of view, has in its favor the production of less pain from injections than produced by other methods, and the same of Durante is a noteworthy advantage.

When the iodine enters into combination with a molecule of caseine, as shown by the comparative proofs of Sclavo, assisting at a distance when it is distributed to other parts, since guaiacol has been adopted as a common thing for a solvent to eliminate iodine, not by limiting its action as a dermal eliminant, but by forming a true and proper combination.

There are clinical results which should decide whether the organism derives the advantage from albuminoid iodine or from the iodine which forms a part of the less complicated molecule of the aromatic series.

The preparation of Sclavo acts like the iodine injected by the method of Durante, since that element in contact with the tissues produces immediately a combination forming an iodated albumin. Durante, when he first wrote, joyfully spoke of the bactericidal property of this iodine, but later ceased to invoke this action because iodine could not act as a disinfectant of the surface, attributing it to too great an energy with albumin when it forms a body absolutely inactive upon germs. The action of iodated milk and of iodine, after Durante and according to Sclavo, acts indirectly upon microorganisms and directly in improving the material change.

When we examine the administration of iodated milk by the mouth, the experiment of Sclavo, made upon himself, demonstrated that the preparation is changed in the intestine with the formation of an alkaline iodide which is absorbed as soon as in two or three hours, and there is the iodine reaction in the urine, a reaction which appears somewhat later when the remedy is introduced subcutaneously.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

SEVENTH ANNUAL MEETING.

Held in New York, May 23, 24, and 25, 1901.

(Continued from page 309.)

Some Observations Upon the Diagnosis and Treatment of Specific Disease of the Naso-Pharynx.

Dr. P. S. Donellan, of Philadelphia, read this paper. He said that he had recently seen a case of chancre on the posterior arch of the palate, the diagnosis being evident from the appearance, and being confirmed by the subsequent course of the disease. There was nothing in the history to point to the manner in which infection had taken place. Ulcerations of the pharynx were common, and were associated with painful deglutition and obstruction of respiration, and the usual symptoms of "catarrh," the diagnosis usually made by the general practitioner after a superficial examination. He had been impressed with the importance of making a routine thorough examination of the naso-pharynx with the aid of White's palate retractor. A bacteriological examination of the secretions of the lesion, and anti-syphilitic treatment would usually enable one to make the differential diagnosis between tuberculosis, syphilis and diphtheria in obscure cases. Local and systemic anti-syphilitic treatment were called for in syphilitic disease of the naso-pharynx. He was personally in favor of the hypodermic method, using bichloride of mercury in doses of $^1/_{16}$ to $^1/_4$ of a grain. The injections are usually given deeply into the muscles of the lumbar region. He gave the mercurial as long as the disease showed activity, and then interruptedly for two years. The alkaline douche and black wash should be used locally. Where there was much dysphagia, orthoform sometimes proved useful.

Dr. George L. Richards, of Fall River, advised that a thorough trial of anti-syphilitic treatment should be given in cases in which a diagnosis of syphilis had been made before resorting to any surgical interference, for, the chances were that such interference would then be found unnecessary.

Dr. L. A. Coffin, of New York City, referred briefly to two desperate cases of syphilis of the pharynx.

Dr. Charles F. McGahan, of Aiken, S. C., said that in his experience most of the cases of tuberculosis of the throat are secondary, and he believed that the same was true of tuberculosis of the nose.

Dr. Price Brown, of Toronto, said that a gentleman had been referred to him by an oculist, some six months ago, for nasal treatment, with the statement that the man had specific keratitis, and had been receiving anti-syphilitic treatment. Examination of the nose showed that the trouble there was traumatic, not syphilitic. He subsequently returned with a perforation of the soft palate, evidently the result of the formation and breaking down of a gamona. The history showed that he had become syphilitic ten years before, but after having been treated for a time had married. Both children were healthy, and the wife was said to be healthy. Under anti-syphilitic treatment the condition of the palate had been kept in check.

An Operation for Prominence of the Auricle.

Dr. Thomas R. Pooley, of New York City, read a paper on this subject. The patient was an actress, twenty-eight years of age, and the operation had been done on both ears at an interval of a few days, following closely the method of Dr. Edward T. Ely. An incision was made through the skin along the entire length of the furrow formed by the junction of the auricle with the side of the head. This was joined at each end by a curved incision, and the skin dissected off. An elliptical piece of the cartilage, ⅛ by ⅓ of an inch, was removed. The wound was united by seven interrupted sutures of black silk, four passing through the skin only, and the other three through both skin and cartilage. The operation was done under local cocaine anesthesia under strict asepsis. The wound behind the ear healed by first intention, and that in front by granulation. The first operation had been done on August 6, 1900, and the patient was well satisfied with the result, and he had been pleased with the method of operating.

Dr. M. D. Lederman, of New York City, reported two cases upon which he had operated. One was a large sebaceous cyst in which after the removal of the cyst the auricle had been bent over on the external canal. He had accordingly made a V-shaped incision over the mastoid, and removed a portion of skin. Primary union had taken place. The other case was in a negro who had a keloid growth on the lobe of the ear.

Dr. T. Passmore Berens, of New York City, spoke of a case in which the protrusion of the ear was caused by an excess of cartilage of the concha. In that case he had excised a piece of cartilage nearly half an inch in its broadest part. The wound was closed simply by a buried suture, and was dressed with collodian, binding the auricle to the side of the head by a gauze bandage. At the end of the fifth day the wound had healed, but the bandage was worn for eight days longer, and by that time the ends of the cartilage had united. The operation had been done two months ago, and at the present time the extra fold of skin left after the operation had nearly disappeared. He was opposed to making an anterior as well as a posterior incision.

Dr. J. F. McKernon, of New York City, said that he had seen a very similar operation done ten years ago by Dr. George Abbott, of this city, except that three sections of the cartilage had been taken out without affecting the skin anteriorly at all. The result had been very good. Within the last three years he had seen another case also yielding a good result.

Dr. Pooley said that he felt sure that any operation which did not involve a considerable dissection of the cartilage would not succeed, but whether one should go through the cntire concha or not was a question.

Clinical Notes on Adrenalin.

Dr. Norton L. Wilson, of Elizabeth, N. J. This paper appeared in full in the August issue of The Laryngoscope. Page 63.

Dr. J. A. Stucky, of Lexington, Ky., said that he had used adrenalin extensively in nose and throat work since last November. He had found that it did produce some anesthesia. When used with cocaine less of the latter was required, and the anesthesia lasted longer. He had found it particularly valuable in middle-ear operations. He did not believe there was any more hemorrhage after its use than after operations in which it was not used, except, perhaps, where there was a great deal of spongy tissue. He rarely used a solution stronger than one to three or five thousand; in subacute laryngitis he employed a solution of the strength of one to ten thousand. An especially useful combination was with resorcin. He had also found it a very valuable remedy to combat the shock following anesthesia from chloroform or ether. In one case of this kind, occurring after chloroform, he had poured about half a drachm of a one to five thousand solution on the tongue, and very quickly the heart action had been revived.

Dr. T. Passmore Berens, of New York City, said that he had been using adrenalin for about six months, and had found that it kept well in his office. He had purposely left one vial uncorked for six weeks, and had found it perfectly sweet and effective at the end of that time. It would blanch and clear up the Eustachian tube in those cases of acute middle-ear catarrh of tubal origin. It had been his practice to inject through the catheter into the tube from three to five drops of the one to one thousand solution, and then with a Politzer bag to blow it into the Eustachian tube. This would keep the tube open for a sufficient length of time to give the patient a good deal of comfort by allowing drainage through the tube. He had also used it hypodermically in two cutaneous operations about the face, and with good result, and also injected it beneath the mucous membrane of the cheek in opening the antrum of Highmore. Here it had answered well in preventing hemorrhage.

Dr. M. D. Lederman, of New York City, thought the drug was especially valuable in lessening the absorption of cocaine, and hence, preventing the occurrence of cocaine toxæmia. Such cases were not nearly so frequent since adrenalin had been in general use. In a case of nasal hydrorrhea the local effect of the remedy had been shown when given by the stomach in conjunction with the local treatment. As it was an animal extract, he favored combining it with some cardiac stimulant to guard against the occurrence of cardiac weakness, when given internally, though it increases blood pressure.

Dr. Otto J. Stein, of Chicago, said that he had recently used this remedy in a case of antrum disease, expecting to have a bloodless field, yet he had had about as much hemorrhage with a one to one thousand solution as if he had not used it. He had employed it in another case in which he had entered the maxillary sinus, and the hemorrhage had been just as profuse as if it had not been used. He had commonly employed adrenalin in the strength of one to three thousand, though sometimes in stronger solution, and he had kept it in contact with the tissues for ten or fifteen minutes.

Dr. Talbot R. Chambers, of Jersey City, N. J., said that he had done the Gleason operation on the nasal septum a good many times, and had not observed the loss of over five or ten drops of blood from cutting the septum if adrenalin had been used. His method was to inject a few drops of adrenalin (one to one thousand with five per cent solution of cocaine) underneath the mucosa, and then the syringe was withdrawn and a few more drops injected.

Finally, a few drops were injected under the mucosa near the anterior nares. Just before operating, some cotton with twenty per cent cocaine is wiped over the hollow of the septum. There was no bleeding after cutting the septum under these circumstances. In one case in which he had done a secondary mastoid operation for purulent otitis media, a cholesteotoma had been found. It would have been almost impossible to have enucleated this entire without the use of the adrenalin, yet with the latter this operation had been performed with perfect success.

Dr. H. Holbrook Curtis, of New York City, said that while he thought the discovery by Dr. W. H. Bates of the suprarenal extract ranked with that by Dr. Carl Koller of cocaine, he had come to the conclusion that there were cases in which because of idiosyncrasy it acted very badly. He had had eight or ten cases in which there had been an absolute intolerance of adrenalin and of any of the preparations of the suprarenal gland. In one of the first of these cases a gentleman sneezed for two hours and a half after having used the suprarenal extract, and then on his return cocaine had been used and had given immediate relief. The sneezing had, however, returned in the evening, and had lasted for hours. He had had hay fever patients, after using suprarenal extract for a few days, suffer from violent pain in the upper part of the nose, necessitating the discontinuance of the remedy. Last fall he had himself used the adrenalin spray for a few days, and then a terrible coryza had set in and had resulted in a genuine hay fever, which had only ceased on the discontinuance of the adrenalin. He had done over 100 septum operations, and when used with cocaine he had yet to see any untoward symptoms. He would like to know if intense pain or sneezing or violent coryza had been noted by others after the use of this substance.

Dr. Edward B. Dench, of New York City, said that he had not used the adrenalin, but had employed suprarenal extract. In all of his cases the effect had been entirely satisfactory as far as the control of hemorrhage was concerned. In one case, where owing to the age of the patient he had avoided general anesthesia, he had done an Asch operation with the aid of cocaine and suprarenal extract, and there had been practically no loss of blood. This had been his experience in many other cases. In middle-ear work he had found suprarenal extract of great value. His method of using it was to saturate a small strip of gauze with the sterilized solution of suprarenal extract, and pack this through the speculum down upon the bleeding point. If left there for about a minute

and a half it would be found that the field was practically dry.

Dr. S. Maccuen Smith, of Philadelphia, said that he had found the drug of special value in cases in which it was used with cocaine to prevent cocaine poisoning. He was accustomed to apply a twenty per cent solution of cocaine, but he never sprayed it into the nostril, but simply made a local application of this solution. Up to the present time he had had no trouble with cocaine alone.

Dr. Walter B, Johnson, of Paterson, said that it was important that the field be made thoroughly clean before the application of the adrenalin. He could not see that there was any difference in the action of suprarenal extract and adrenalin, though on the score of convenience adrenalin was greatly to be preferred. He had not met with any idiosyncrasies, all of the cases in which he had used it having been very satisfactory. The effect of the adrenalin on the lymph channels of the eye was very important.

Dr. Max A. Goldstein, of St. Louis, said that occasionally a very acute irritation and active, continued sneezing was produced by spraying even a weak solution of the drug on the mucosa. He would like to suggest to Dr. Takamini that this might be overcome by dissolving the adrenalin in an oil instead of using an aqueous vehicle. A 1 to 1,000 solution would be found useful in cases of acute laryngitis, especially the laryngitis of singers. If a solution of this strength were sprayed upon the larynx just before singing the result would be most gratifying.

Dr. L. L. Mial, of New York City, said that he had used the suprarenal extract in the nose in two cases in which it had produced violent sneezing, lasting ten to twelve hours. The solution of adrenalin with chloretone was distinctly anesthetic and did not produce this sneezing. He had used this combination in removing spurs from the septum and chelazion from the eyelids. It caused slight smarting for a few seconds, but was very soothing after the application of sulphate of copper in cases of trachoma.

Dr. M. R. Ward, of Pittsburg, said that he had had some adverse results, but had not attributed them to the drug used, but rather to a defective technique. He had met with some irritating effects from the remedy, but had never seen any hemorrhage after its use. In some plastic operations on the septum he had had some difficulty in the way of sloughing. Whether this was due to lack of cleanliness or to the disturbance of nutrition produced by the drug he was unable to say.

Dr. R. C. Myles, of New York City, said that he had been particularly fortunate in the use of the powdered suprarenal extract during the past few years. In the last few months he had unfortunate results with the aqueous solution with resorcin, and had three patients leave him because of this. In one case he had used in the nose a ten per cent aqueous solution of suprarenal extract containing two per cent of resorcin. It had caused very troublesome sneezing and then the patient had disappeared. In another case the sneezing had lasted all night and all the next day. All these unfavorable results had occurred in connection with the use of the aqueous solution of suprarenal extract, never with the powdered extract. The solution had been boiled each time.

Dr. Price Brown said that he had not used the extract for about one year because he had met so frequently with irritation. He intended to try adrenalin.

Dr. Charles W. Richardson, of Washington, D. C., thought that all must have noticed certain constitutional effects, such as attacks of vertigo, with nausea and headache, resulting from internal administration of the drug.

Dr. Johichi Takamini, of New York City, was invited to take part in the discussion. He said that his work had consisted simply in the isolation of the active principle of the suprarenal gland. He had been the first one to isolate this active principle in the chemically pure crystalline form, and he looked upon this feat as only the beginning of great progress in organotherapy. It was probable that the active principle of many other glands would be similarly isolated in the near future. The very fact of adrenalin being crystallin was Nature's certificate that it was a definite chemical substance. It was not his province to determine the best dose or strength in which it should be used. Chemically, the adrenalin was a very mild alkali, the alkalinity of which had been just neutralized. He could not, therefore, understand why it should produce such irritation as had been described by some of the speakers. Dr. E. Fletcher Ingalls, of Chicago, was one of those who had complained to him of the irritation produced by adrenalin, but from a published article by Dr. Ingalls he had learned that this physician had been in the habit of dipping his instruments into a formalin solution. This, of course, would readily explain the irritation observed. It was well known that distilled water produces a good deal of irritation in the eye, and also in the nose, and hence the solution should be made slightly alkaline. The ordinary suprarenal extract contained considerable

mineral matter, and its solution was therefore similar to normal salt solution. He had tried the plan of dissolving adrenalin in oil, but had found it practically insoluble. He had, however, succeeded in making an oleate of adrenalin, but the moment this is sprayed it is liable to oxidize and to become quickly inert. It might be possible by the use of a device which would expose only five or ten drops to the air to make use of this oleate and so overcome the objection just mentioned.

Dr. Wilson, in closing the discussion, said that he had observed none of the cases of irritation. He had seen irritation from the watery extract of the suprarenal extract, and yet in the same patient adrenalin had not produced this irritation. He had never succeeded in obtaining as active a preparation of the suprarenal extract after sterilizing it by heat. Such deterioration he had not observed with adrenalin, which could be sterilized repeatedly without lessening its efficiency. He had never observed sloughs after the use of adrenalin, though he had used this drug for two days after operation. He was inclined to think that some physicians used it too strong; one to five or ten thousand was strong enough for ordinary cases.

Empyema of the Right Maxillary, Ethmoidal and Sphenoidal Sinuses, with Subsequent Blindness of the Left Eye; Operation and Recovery of Sight.

Dr. T. H. Halsted, of Syracuse, N. Y., reported this case, and called attention to the frequent anatomical variations in the structure of the sinuses. In the past year many cases had been reported showing the relation of sinus disease as a cause, and eye lesion as a result. The case reported was that of a woman of forty-five, who, on awakening, had found herself totally blind in the left eye. Examination showed swelling of the sheath of the left optic nerve, enlarged and tortuous veins and quantitative perception of light only For about two years she had had some nasal catarrh, and some months previously had had an acute exacerbation characterized by a constant and free discharge of odorous pus. This pus had been discharged only from the right side. On examination he had found the left side clear. There was pus coming from under the right middle turbinate. Under transillumination the right maxillary sinus was completely dark, and both frontal sinuses were very translucent. The left pupil was widely dilated, and there was exophthalmos. He had made the diagnosis of empyema of the right antrum, right ethmoidal and sphenoidal sinuses, with rupture and probable

pressure on the optic nerve. He had advised immediate opening to relieve the pressure. Under cocaine anesthesia and with the aid of suprarenal extract, the operation had been undertaken, but had been carried on with difficulty because of the free hemorrhage. A week after the operation she could count her fingers, nasal respiration was much improved, and pus was coming from the right side of the nose. Two or three weeks later it had been necessaty to enter the antrum and evacuate a considerable quantity of stinking pus. The antrum tube had been removed now about six weeks; she was entirely free from headache and insomnia, and her general condition had greatly improved. She could read ordinary type with the left eye. From a study of this case it seemed probable that the sudden onset of blindness was the result of the accumulation of pus in the sphenoidal cavity and pressure on the optic nerve passing through the optic foramen.

A Case of Frontal and Ethmoidal Disease with Abscess of the Orbit.

Dr. Thomas R. Pooley, of New York City, reported this case. The patient was a youth of nineteen who had come to him suffering intense pain around the right eye, and that side of the head. The temperature was 104°F., and the pulse 120. Six years previously this eye had suddenly swollen, and had been relieved somewhat by an incision of the lid. Two years later the sinus had been opened to relieve the swelling. Dr. Pooley had operated under ether anesthesia, exposing the orbit. The sinus was found enlarged and was curetted. On entering the depth of the orbit one or two drachms of pus escaped. An opening was then made into the anterior ethmoidal cells, and through the infundibulum into the nose. A soft rubber catheter was then drawn through, and the ends of the tube tied together. The wound was packed around the tube. This operation effected immediate improvement. Almost daily dressings were made, and at the end of two months healing was complete. Numerous nasal polypi were discovered after this operation, but they disappeared in a short time. The paper concluded with a reference to the common involvement of the accessory sinuses after scarlet fever, and the need for prompt and thorough treatment when there is external swelling. The patient was exhibited.

Empyema of the Frontal Sinus; Some Observations on Its Treatment,

Dr. Geore L. Richards, of Fall River, Mass., read this paper. He called attention to the fact that the frontal sinus varied in position, size and thickness. The danger to life of empyema of this sinus he considered to be very small. If exploratory puncture of the antrum were negative, then the source of the pus might be the anterior ethmoidal cells. Transillumination was of some value. As a rule, the entire anterior portion of the middle turbinate would have to be removed as a preliminary measure to treatment. These cases tend to get well if the drainage were thorough enough. The direction of the canal having been determined by means of a probe, a silver or hard rubber tube, curved like the probe, should be passed in and the sinus washed out. Where the purulent discharge had lasted a long time, and polypi had formed, it was more difficult to decide upon the best method of treatment. The anterior ethmoidal cells should be thoroughly destroyed with the curette. He had the best results from irrigation when he had used a solution of corrosive sublimate, 1 to 10,000. The question of operation must depend upon the presence of evidence of septic absorption, of symptoms of cerebral irritation or the recurrence of attacks of pain. He preferred to make the opening between the supraorbital notch and the root of the nose, and underneath the ridge, and preferred the mallet, chisel and curette to the surgical drill. The opening should be made as large as possible, and all the ramifications of the sinus vigorously curretted. The best form of drainage was by the fenestrated rubber tube. The tube should be retained at least two or three weeks. It was best to keep the external wound open for a time.

Dr. Neil J. Hepburn, of New York City, said that in Dr. Halsted's case the blindness might have resulted from a thrombosis of the central retinal vein. Unless the pressure had occurred very suddenly it could hardly account for the very sudden onset of the optic neuritis of that grade. An ordinary optic neuritis coming on from pressure would disclose a certain progressive loss of vision. He had witnessed one case of operation on the sphenoidal abscess by an eminent surgeon, in which the cavernous sinus had been accidentaliy opened. The hemorrhage had been most startling, but the surgeon had retained his composure, and had succeeded in controlling the bleeding by packing in a way which had led the eye witnesses to have less dread in the future of the occurrence of such an accident.

Dr. Talbot R. Chambers said that many cases of frontal sinusitis if taken in hand early might be aborted before the occurrence of the purulent stage. The accumulation of mucus in a frontal sinus was the first step of a sinusitis, and could be readily evacuated. When entering the sinus and removing bone, it was better to use an instrument which could punch out an opening. A case was mentioned in which at one sitting he had taken away the inferior turbinate and the covering of the sphenoidal sinus, and opened the whole space into one cavity. By this procedure the mucous secretion could be removed in certain cases at an early stage.

Dr. Sargent F. Snow said that two years ago he had had a case quite similar to the one reported by Dr. Halsted. The difference was that the blindness had been a week in coming on. There had been so much pressure that the vitality of the bone had been lowered, and the operation had been done for the most part with a Buck's ear curette, slightly bent near the ring, a very safe instrument for such work.

Dr. Redmond W. Payne, of San Francisco, said that Dr. Richard's paper and exhibition of skulls called to mind some of his own work. He had endeavored to determine the number of anomalies met with in this region. In the formation of the sinus itself was to be found the reason for many failures. In some of the sinuses that he had examined the depth of the sinus had run back over the orbit almost to the optic foramen, both plates being exceedingly thin. In some instances in which the sinus had run back deeply it had been divided into several compartments by bony septa. Such cases showed at once the impossibility of eradicating the disease by any opening below without an attempt to reach it with the curette. The external wall should be removed either entire or in section, thus exposing the seat of the disease, and admitting of thorough exploration. If the mucous membrane lining the sinus had undergone fungus or polypoid degeneration, and two-thirds of it only had been removed, the patient would not be permanently cured. Many of these cases of chronic suppuration would go on for years. Not many cases of meningitis had been reported in this connection, but as there were many cases of meningitis following chronic suppuration of the ear he saw no reason why the same should not occur in cases of sinus disease.

Dr. Charles W. Richardson, of Washington, D. C., spoke concerniug operative intervention in cases of purulent discharge from these sinuses. When pus issues from a closed cavity the proper course was to insist upon the opening of the sinus and re-

moving the diseased condition found there. It seemed to him that conservatism was not at all in place where there was a purulent discharge from these sinuses. In a sinus so accessible as the frontal there should be no question as to the wisdom of operative intervention. A very slight purulent discharge might be connected with very extensive disease. In other regions of the body in which operative intervention was much more dangerous the general surgeon did not hesitate, and he could not see why the rhinologist should be so backward about operating. No one hesitates about opening an abscess of the mastoid. These operations should be done promptly and as thoroughly as possible.

Dr. R. C. Myles said that free drainage was far better than anything else. He had always been opposed to over-curetting of these sinuses, for he was of the opinion that by such treatment the period of convalescence was greatly prolonged or indefinitely postponed. By such curetting the mucosa and periosteum were removed, and the re-formation of these tissues not only takes a long time but is apt not to re-form in many crevices, and this leads to a permanent discharge. Extensive destruction of the ethmoid cells or of bony tissue intended to protect the frontal sinus usually made the patient's condition worse than before the operation. According to his experience, the best way of obtaining free drainage was by removing the anterior end of the middle turbinate, and also the median wall of the anterior ethmoidal cells. This alone, with proper irrigation, would effect a permanent cure in the majority of these cases. It was his practice to remove the anterior wall of the sphenoidal cells rather thoroughly, never curetting the upper wall. In a few months the opening would close by contraction of the mucous membrane, but it could be quickly and almost painlessly opened with a bistoury. In the unfavorably frontal sinus cases, the great obstacle was the nasal process of the superior maxillary bone. Entrance above the orbit was the straightest way for removing this process. This could be done well only by making the opening above the supraorbital ridge. He formerly did the infraorbital operation and had experienced great difficulty in getting rid of this hard, bony process. In his opinion, all cases of acute empyema of these cells should be carefully studied before attempting operation. In chronic cases, conservatism should be given a trial. Frequently irrigation would be sufficient, or the mere extraction of a tooth, and it should be tried first, care being taken to explain to the patient that it was in the nature of a preliminary operation.

Observations Upon the Treatment of Stricture of the Lachrymal Duct by Electrolysis.

DR. L. L. MIAL, of New York City, read this paper. He said that he had found silver the best metal to use, and preferred to place the positive electrode on the wrist. As a stricture was never the whole length of the canal, it was a matter of much importance to apply the current only to the narrowed portion. He had used the volt selector, the amperemeter and a rheostat, with the Edison 110-volt current. Anyone could satisfy himself of the relaxing effect of the current by introducing an instrument which is tightly grasped, and then noting how loosely it was held after the passage of the current. Each seance should last from thirty seconds to three minutes. Several illustrative cases were reported. The author claimed that electrolysis is harmless if used properly, that it is antiseptic in its action, that it is much less painful than the usual mode of passing probe, and that it dissolves and relaxes strictures much better than any other method, thus diminishing the danger of tearing the mucous membrane and making false passages.

DR. T. R. CHAMBERS asked if Dr. Mial had used the combination of cocaine and adrenalin in the lachrymal canal. He had found that if it were passed in by a small bougie it would be possible to pass a No. 2 or 3 probe. The electrolytic treatment of these cases was new to him, and called for serious consideration, even after making all due allowance for enthusiasm.

DR. N. L. WILSON thought the advantage of electrolysis was simply to relieve the stricture. When he had begun to use electrolysis in the Eustachian tube for this purpose it had occurred to him that the method was applicable to the lachrymal duct, and he had used it in that duct with equally good results as regards relieving the stricture.

DR. C. DUNBAR ROW, of Atlanta, Ga., said that he had used electrolysis in the Eustachian tube but not in the lachrymal canal. He would like to ask whether these electrical bougies are passed through the upper or the lower canaliculus, and whether the latter is always slit before the passage of the bougie.

DR. E. E. HOLT, of Protland, Me., said that the treatment of these cases was exceedingly difficult at the best, and any improvement should be welcome. In 1881 he had spent some time with Mr. Bowman, and had studied the subject very carefully with those attending the Seventh International Medical Congress in London at that time. It was quite amusing to note the different methods

of treatment by those living in different parts of the world. He noted that Mr. Bowman had had some of his cases under treatment a very long time, one of them for fourteen years. He had remarked at the time that quicker methods were demanded in America. Dr. Holt said that his routine method of treating lachrymal disease of long standing was to dilate the lachrymal canal under ether anesthesia up to No. 13 Bowman, and put in a lead style. He believed, however, that in many cases a good deal could be accomplished by electrolysis.

Dr. Mial, in closing, said that he had used adrenalin and cocaine in the lachrymal duct, and while it allowed one to pass the probe with less discomfort to the patient, it had no effect on the stricture. He had used the electrical probe in both the upper and lower canaliculi, but for stricture of the lachrymal duct he always used the lower canaliculus, and the great advantage of the electrolytic method was that one could easily dilate to No. 5 or even No. 8. When an insulated electrical bougie of such size could be introduced the result was exceedingly good, and was obtained without risk. One should not lose sight of the fact that the strictures are relieved. Why the epiphora was not relieved in certain cases he was not prepared to say. He was of the opinion that a stronger current could be used in the Eustachian tube than in the lachrymal duct. He could not give the reason for this, but probably it was because there was more moisture in the lachrymal passages.

A Few Remarks on a Generally Unrecognized Ear Disease.

Dr. H. A. Alderton, of Brooklyn, N. Y., read this paper. He said that the mucous form of otitis occurs more frequently in adults than in children, and often after an attack of grip. There was often little or no pain, but a stuffy feeling in the ear and a diminution of hearing. Crackling sounds on blowing the nose or swallowing was not so common as in the serous variety. Tinnitus was apt to be severe, and there might be vertiginous attacks. Inspection showed but little congestion, and the membrane in its normal position, though lacking lustre and having a dull gray color. There was a dull-looking area of hyperemia along the handle of the malleus and at the periphery of the drum membrane. In most cases the tube was obstructed. There was a noticeable disproportion between the power to hear a whisper and the spoken voice. The upper-tone limit was not much affected. The pulse and temperature were practically normal. The condition might last from a few weeks to a number of years. Inflation of the tym-

panum improved the hearing. On incision of the tympanic membrane there might be no discharge, but on inflation a stringy tenacious discharge made its appearance in the canal, and the hearing was immediately greatly improved. Douching through the external canal had seemed, in his experience, to do only harm. The treatment par excellence was incision and evacuation of the tympanum with measures directed towards improving the condition of the naso-pharynx. The drum membrane was often healed at the second dressing.

Tuberculous Otitis Media; Mastoiditis and Meningitis in an Otherwise Apparently Healthy Adult.

Dr. J. F. McCaw, of Watertown, N. Y., made a brief report of this case. The patient, a male of forty-five years, he had first seen on December 11, 1900. About one year previously, without assignable cause, a thin discharge had begun from the left ear, and at intervals of two or three months there had been an attack of slight pain in the ear and sensitiveness in this region, with an increase in this discharge. There had been no special change in his general physical condition up to seven weeks before coming under observation, when he had had an attack, supposed to be the grip. About this time he had had one of the attacks of pain around the left ear, and for the last week had become lethargic and weak. On examination, he could not be aroused from his stupor, but responded to stimuli. There was tenderness over the ear and a foul discharge from the ear. The tympanic cavity was filled with granulation tissue and pus. No glandular enlargements were observed. The diagnosis of cerebral abscess was considered probable. The mastoid operation had been done the same afternoon, and this had revealed extensive bone destruction. The wall of the sigmoid sinus and the meninges of the brain were exposed during the operation, and were found to be studded with numerous miliary tubercle. The patient died twelve hours later. At the post-mortem examination the lungs, liver, spleen and kidneys were found free from tubercle, and the mesenteric glands not enlarged. Scrapings from the mastoid showed the presence of tubercle bacilli and streptococci. An examination of the brain was not permitted. The experience of most observers seemed to indicate that primary tuberculosis of the ear occurs infrequently.

Dr. M. A. Goldstein, of St. Louis, reported three cases observed by him during the past ten years of tubercular mastoiditis which might possibly be considered primary. The first case had been reported about nine years ago. The patient was a little colored

boy in whom the sequestrum contained the cochlea and part of the semi-circular canals. Numerous tubercle bacilli were found in the discharge from the ear, and physical examination failed to reveal a tuberculous process in other parts of the body at that time. Eight months later this child died of miliary tuberculosis. The second case was that of a girl of nine years, whom he had operated upon about seven years ago. The granulation tissue had been found already invaded by tubercle bacilli. The child had made an uneventful recovery, and was well to-day. The third case had been operated upon twice for mastoiditis, the second operation having been about six months ago. The wound was now slowly healing, and he was inclined to think there was still a tubercular focus or nidus in the ear. Examination of the sputum and of the lungs had been negative as regards any other tuberculous process. These cases were possibly examples of primary tuberculosis of the ear.

Dr. J. F. McKernon, of New York City, said that three years and a half ago he had had a case under observation for a short time before operation. After operation the wound had failed to heal, and after about four months examination of the granulation tissue had shown the presence of numerous tubercle bacilli. The lungs had been carefully examined by two excellent diagnosticians but no tuberculosis discovered. He had had the case under observation ever since the operation. The wound of the ear would heal at intervals, and then break down again. No evidence of general tuberculosis had yet been discovered, and he was inclined to look upon this as a case of primary tuberculosis of the middle ear. Packing the ear with gauze soaked in the valerianate of guaiacol seemed to be the only thing that provoked even temporary healing.

The Schwartze-Stacke Operation for Chronic Suppurative Otitis Media; Re-formation of the Tympanic Membrane; Secondary Myringectomy; Improved Hearing—By Dr. M. D. Lederman, of New York City. This paper will appear in full in The Laryngoscope in an early issue.

A Case of Sinus Disease.

Dr. Edward B. Dench, of New York City, presented a patient upon whom he had operated about six weeks ago for acute mastoiditis. The internal table had been found carious, and a clot had been discovered in the sinus. There had been an unusual elevation of temperature after the operation, and on the fourth day he had ligated the internal jugular vein and had found a softened clot. Since then recovery had been uninterrupted.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, October 23, 1901.

W. K. Simpson, M.D., Chairman.

A Post-Nasal Syringe.

Dr. Wendell C. Phillips said that last winter he had visited Dr. White, of Richmond, and had seen at his office a useful little device, which seemed worth exhibiting. It was a little syringe for use in cases of chronic atrophic rhinits. The instrument consists of a rubber ball to which is attached a small, soft rubber catheter freely perforated laterally. This the patient can readily insert into the nasal passages, and by squeezing the bulb the fluid is forced into the nose and naso-pharynx. It was a very convenient instrument for use at the patient's home. It is called the Success Nasal Syringe.

Dr. Francis J. Quinlan exhibited the following cases:

Mycosis of the Tonsil.

The patient was a young woman having a typical form of mycosis of the tonsil, the leptothrix variety. The peculiarity about this form was that it was absolutely circumscribed—being confined to one tonsil, and would be mistaken for follicular tonsilitis.

Tuberculosis of Tonsil and Pharynx.

This patient, male, about thirty years old, had been at another clinic under treatment for tubercular disease of the rectum. On examination there was found a large fungating growth at the base of the tonsil, which involved pharynx. A number of microscopic sections made it evident that the swelling was tuberculous. As an experiment the man had been given inunctions and the iodides, with considerable improvement. This showed how many syphilitic cases afford good soil for tuberculous infection.

Syphilis of Nose and Pharynx.

This woman had what would appear to be a lupoid sore on the nose. Further examination, especially of the pharynx, indicated that syphilitic lesions coexisted. She was now using mercurial ointments with benefit. Dr. Quinlan also showed a man

having a syphilitic process involving the columnar cartilage. He also had been on mixed treatment and on inunctions, and had improved greatly under this treatment. The two last patients were exhibited to show the disease occurring in one patient symmetrically, and in the other asymmetrically—namely, the disease attacking in the former the cartilage.

Malignant (?) Growth.

The man had had a growth since last July, and complained of difficult and painful deglutition. The sore had evidently started from the floor of the mouth, but it now involved the base as well as the side of the tongue, and there was a distinct infiltrating glossitis. There had been no response from anti-syphilitic treatment, although there was a history of a primary lesion.

Dr. W. C. Phillips said that the patient having what was supposed to be a tubercular ulceration of the soft palate, seemed to him to present the appearance of a syphilitic ulceration. He had never seen such an ulceration of a tuberculous nature in the soft palate.

Dr. Edward L. Meierhof said that he had seen quite a number of lesions of the tongue, and thought syphilis could be positively excluded. There were several very ragged teeth in the lower jaw, and there was an enormous adenopathy on each side of the inferior maxilla.

Falsetto Voice—Treatment.

Dr. Arthur B. Duel presented a young man, a native of Bermuda, with a falsetto voice. He said that these cases were not uncommon, yet very little had been written about them. About all that he had been able to find by American writers had been by Dr. Makuen, of Philadelphia. It seemed to him that a cure had been effected in this case largely by suggestion. By holding down the patient's larynx he could be induced to speak in a proper voice, but would at once break into a falsetto on relinquishing the hold on the larynx. He had been assured that his trouble could be quickly overcome by holding the larynx in a certain way and practicing a few scales. He had been very quickly cured, and now found it almost impossible to speak in his old voice. Dr. Duel said that he wished to bring out very clearly the fact that this form of functional neurosis could be easily cured by proper measures.

A Case of Laryngeal Neoplasm.

Dr. Thomas J. Harris presented this case, that of a man over eighty years, who had had loss of voice for over a year. The case

had been under treatment for about two months. The interesting points in the history were that he had no pain in the larynx, scarcely any glandular enlargement, and the loss of voice was complete. Examination of the larynx showed a cauliflower growth, which had not increased since he had been under observation. It did not appear to be subglottic. While he felt pretty sure that this was a case of malignant disease, no microscopical examination had been made, as he did not feel like removing a portion for examination. Nor had the man been subjected to treatment with the iodides. In this connection Dr. Harris mentioned another doubtful case occurring in a younger man, a case of Dr. Phillips'. There was in this case a mass involving the posterior third of the left vocal cord. Here also there had been no pain. There had been no marked improvement under the iodides, and no change in the growth in the course of the three months he had been under observation.

Dr. Phillips said he had seen the second case referred to by Dr. Harris. The man admitted that there might be some specific taint, and he had been put upon iodides during the summer. On his return in September the general appearance of the growth had been very much improved, though its size had remained about the same. He had been advised to push the iodide up to forty or fifty drops three times a day. He had returned in a few days afterward stating that a medical friend had taken him to another laryngologist, and that a section had been removed and examined, and had been reported to be malignant. The growth involved the posterior two-thirds of the left vocal cord.

Dr. Quinlan said that the laryngologist referred to was himself. He had seen this growth, and its appearance at first had suggested to him a typical epithelioma. The first section, however, examined had been reported to be papilloma, but other specimens had been examined by a skilled microscopist and reported to be undoubtedly an epithelioma.

Dr. J. W. Gleitsmann said that his experience with these malignant growths had not been very favorable as to the ultimate issue, most of the patients having died within a very few years. He desired to report upon a case which he had hoped to save because it was in an early stage and the operation had been done by a surgeon especially skilled in this work. It was an unilateral growth, and a portion removed proved to be malignant. The operation intended to be performed was unilateral laryngectomy, but as a carcinomatous gland had been found in front, the larynx was wholly taken out and the trachea sewed to the skin. The man had done quite well for some

time, but about five months later he had returned with the whole cervical region involved in a most extensive carcinomatous infiltration. The case was reported because of the early diagnosis made, and the fact that the growth had been entirely confined to one side of the larynx, the posterior commissure being entirely free. The operation had been a thoroughly radical one. This had been his usual experience with other cases of this class.

Dr. W. F. Chappell thought Dr. Harris had shown a great deal of good judgment in doing nothing to his patient, not even removing a portion for examination. He thought a growth on the posterior end of the cord was most unfavorable for operation. The best chance for a non-recurrence was when the growth was on the anterior third of the cord.

Dr. W. K. Simpson endorsed the view expressed by the last speaker. His experience had been that when there was any malignant growth of the posterior portion of the larynx that was largely extralaryngeal, one could not tell from the laryngeal examination how far it extended.

The Early Appearances of Laryngeal Tuberculosis.

Dr. H. Holbrook Curtis. This paper will be published in full in the next issue of The Laryngoscope.

Dr. Gleitsmann called attention especially to one of the symptoms mentioned, *i. e.*, the unilateral congestion of the cords. This symptom, he said, was always suspicious to him either of tuberculosis or of cancer. In the last eighteen months he had seen more than one case in which a thorough examination of the chest and frequent observations of the temperature had failed to show evidence of tuberculosis, and yet an injection of tuberculin had brought out a reaction. The larynx was a good place in which to study this reaction. Reference was made to two cases to show that even in far advanced cases it was sometimes very difficult to make a diagnosis. In one case he had made a diagnosis of tuberculosis of the larynx in which he disagreed, and the patient had been subsequently reported to him as perfectly well. The other case had been brought to this Section by one of the members, and had been previously treated in Troy for tuberculous laryngitis. The man had then been sent to Denver, but on his way there had consulted a noted laryngologist in Chicago, who had told him that he had no tuberculosis and had sent him home. The speaker said that he had seen this man a short time afterward and had insisted that the diagnosis of tuberculosis of the

larynx was correct. Eventually tubercle bacilli had been found in this case. These cases were reported to show the difficulties experienced, even by skilled laryngologists of high repute. He further would insist upon the existence of primary tuberculosis of the larynx, and could produce two cases of this kind. The burden of proof should rest on those who deny its existence.

Dr. W. F. Chappell agreed with the author of the paper regarding what he had said about the commissure being the favorite seat of early tuberculosis. He had observed a laryngorrhea, which in quite a number of cases had preceded any changes that could be observed with the laryngoscope. With this laryngorrhea was usually associated a peculiar pale appearance of the pharynx, larynx and trachea. This laryngorrhea was the premonitory symptom of tuberculous laryngitis in quite a number of cases. The location of the early lesion is a good guide to the prognosis. Where the disease begins in the posterior commissure the prognosis is much more unfavorable than in those in which the primary appearance is in the cord or in the ventricular band. If there was a redness or slight nodular appearance on one of the cords or ventricular bands, it might last for a long time without breaking down, and even after breaking down it often remained circumscribed. When the first appearance is in the posterior commissure it is apt to spread upward rather rapidly. Regarding the treatment, he would say that he had had some considerable experience with curetting the larynx, and he looked upon it as a very unwise and unfortunate practice. He only favored curetting in tubercular laryngitis when there is much thickened tissne without any broken surface, and when the pulmonary process is quiescent. Under other circumstances curetting would usually leave a raw surface which rarely healed and opened new channels for tuberculous infection.

Dr. T. J. Harris asked if it had been the experience of others that every case of infiltration of the posterior commissure is tubercular. He had been taught in Vienna that these cases might be catarrhal, and that in the absence of bacilli in the sputum or of pulmonary signs one was not warranted in diagnosing a tubercular condition simply because of the existence of this infiltration. He called attention also to hoarseness as a result of impaired action of the cord. He had seen such a case eight or ten years ago in a young man who had developed a hoarseness after an attack of pleurisy. There was no infiltration of the posterior commissure, but a seeming interference with the action of one vocal cord. There was no edema of the arytenoid, but the cords did not come together. The patient

went to California, and, after a residence there for two or three years, returned to this city, and was now a practising lawyer. His voice had remained perfectly clear.

Dr. Gleitsmann said that infiltrations of the posterior commissure on the laryngeal side were not always tuberculous. Infiltrations on the esophageal side in cases suspicious of tuberculosis would be found to be tuberculous in their nature, but there were many infiltrations of the commissure which had nothing to do with tuberculosis. He had seen infiltration of such a degree that the patient had been unable to talk distinctly. They occurred generally in those who do not use their voice properly. Some of these infiltrations were so dense as to resemble connective tissue.

Dr. Harris said that he was glad to hear Dr. Gleitsmann's remarks on this subject. At the present time he had such a case under observation, in which examination of the chest and of the sputum had been negative. The patient, a young woman, had a loss of voice at night with a clear voice in the morning.

Dr. Meierhof commended the paper because of its very practical character. If we were to accomplish anything in this apparently hopeless class of cases it certainly must be done in the very early stages. In his clinic he saw many persons who were particularly susceptible to tuberculosis, but most of the cases were seen only in the advanced stages, and they were very difficult and unsatisfactory ones to treat. There is no question that the cases seen early are curable in a great measure if they obtain the benefit of proper climatic changes, etc.

Dr. Quinlan said regarding the crenated condition of the posterior wall and the clumsy swallowing, that in all cases in which such symptoms were present he looked for increased pulse and respiration and some elevation of temperature. Such observations along with the appearances presented by the laryngoscope sometimes enable one to treat these cases quite early. Surgical interference, even in the later stages, seemed to him almost a relic of barbarism. Orthoform accomplishes wonders in these cases; it causes a zone of leucocytes to form around the diseased area, allays irritation and promotes healing.

Dr. W. K. Simpson said that he had come to the conclusion that there are a certain number of cases of interarytenoid thickening apparently not tubercular in their nature. He was inclined to think that too much stress had been laid upon an early anæmia of the larynx in these cases. According to his experience there is frequently an early and well-marked hyperæmia.

Dr, Curtis' Closing Rremarks.

DR. CURTIS said that primary laryngeal tuberculosis could not be asserted without post-mortem evidence. In regard to the infiltration of the commissure, he thought great importance should be given to the crenated papillary neoplastic deposit rather than the infiltration itself, which might be due to other causes than tubercle. He did not agree with many observers that treatment was better than climatic effect. Nor could he agree that marked anæmia of the pharynx was a symptom always existing in the early stages of the disease. He wished to dwell upon the morning depression of temperature to sub-normal instead of looking for a febrile state in the early manifestations. As for early treatment, he had found iodoform and ether inhalations most soothing and efficacious. He did not believe in surgical interference except in cases in which the epiglottis seemed to be principally involved.

Stenosis Following Intubation.

DR. J. A. KENEFICK presented this case, which had been reported by him last December. The child had come to the Manhattan Eye and Ear Hospital in June, and had been transferred to the Willard Parker Hospital for diphtheria. He had been discharged from there on October 12. While at that hospital he had been intubated twenty-eight or thirty times. Dr. Kenefick had then treated him with tubes, gradually increasing in size, beginning with the two-year-old and finally using a specially made six-to-eight tube. On December 19th he had been found without his tube, and had been without it ever since, though before that he had been able to go without it only for a short time. The boy's general condition had improved, and he could now phonate quite well. When he had first intubated, the feeling had been that of passing the tube through a mass of granulation tissue, but this had gradually become less distinct during the treatment.

DR. CHAPPELL said that he had had one such case, and, failing in every other way to secure relief, he had finally done a tracheotomy and had left the tube in for a month. Since then there had been no stenosis and no further need for the tube.

DR. HARRIS referred to a case which he had been hurriedly summoned to see in the night. Before tracheotomy could be done the child had died. In this case, one of repeated intubation, the child had been suddenly seized with dyspnea and a search for the tube had failed to find it. This emphasized the necessity for keeping these patients under careful observation.

DR. DUEL reported a case in which tracheotomy tube had been retained. On attempting intubation it could not be done. He had then done a thyrotomy, and had found that there had been an erosion of the trachea, and the subsequent contraction had almost completely closed off the trachea above the tracheotomy wound. He had then sewed in a long tube in order to hold this band apart, and had subsequently inserted a much longer tube which came down below the tracheal wound. The case had passed through many trying vicissitudes, but was now doing well without any artificial tubes.

DR. SIMPSON said that it had never yet been positively determined what was present that necessitated the first repetition of an intubation. In one case coming to autopsy there had been found a complete breaking down of the cricoid cartilage. After intubation had been done a number of times the cause was entirely different—it was adventitious tissue due to the pressure of the tube.

DR. QUINLAN said that, at the suggestion of Dr. O'Dwyer, he had kept the mouth apart as long as possible with a mouth gag, and had nourished the child by rectum. Since he had adopted this practice he had had no trouble with the tube. This might, of course, have been a coincidence. In one case in which the tube had been retained 110 days, and the child had died suddenly, an autopsy had been obtained, and had disclosed a sacculated condition of the mucous membrane, but no adventitious tissue. Where there was danger of immediate suffocation, a rapid incision should be made into the crico-thyroid membrane.

BIBLIOGRAPHY.

It is our purpose to furnish in this Department a complete and reliable record of the world's current literature of Rhinology, Laryngology and Otology.

All papers marked (*) will be published in abstract in THE LARYNGOSCOPE.

Authors noting an omission of their papers will confer a favor by informing the Editor.

I. NOSE AND NASO-PHARYNX.

Diseases of the Sense of Smell Caused by Foreign Bodies. T. SUGEI. *Dai Nippon Ji-Bi-In-Ko Kwa-Kwai Kwai Ho,* Tokyo, June 20, 1901.

Suggestions for the Reconstruction of Syphilitic Noses. JOHN B. ROBERTS. *Journ. A. M. A.*, April 13, 1901.

Acute Edema of the Nasal Septum. J. L. GOODALE (Boston). *Journ. A. M. A.*, July 20, 1901.

Treatment of Deflected Septum Complicated by Traumatic Deformity of the External Nose. E. B. GLEASON (Philadelphia). *Journ. A. M. A.*, March 9.

Bleeding Tumors of the Nasal Septum. A. COLAMIDA (Torino). *Arch. Ital. di Otol. Rin. e Lar.*, xi, 469, 1901.

Primary Carcinoma of the Naso-Pharynx. A Table of Cases. CHEVALIER JACKSON (Pittsburg). *Journ. A. M. A.*, August 10, 1901.

A Case of Nasal Sarcoma with Remarks. DUNBAR ROY (Atlanta, Ga.) *Journ. A. M. A.*, August 10, 1901.

Remarks on the After-Effects of Operations for the Removal of Adenoid Tissue in the Vault of the Pharynx. E. L. SHURLY (Detroit). *Journ. A. M. A.*, May 11, 1901.

The Relation of the Middle Turbinate Body to Nasal Disease. L. H. BAKER. *Journ. A. M. A.*, July 20, 1901.

The Ocular Expression of Internal Lesion. ROBERT SATTLER (Cincinnati). *Journ. A. M. A.*, May 18, 1901.

II. MOUTH AND PHARYNX.

Asthma as a Result of Nasal Conditions. P. J. H. FARRELL. *Journ. A. M. A.*, July 27.

An Unusual Anomaly of the Faucial Tonsils. GEORGE L. RICHARDS (Fall River, Mass.) *Journ. A. M. A.*, July 27.

Malignant Disease of the Tonsil. F. E. HOPKINS. *Boston Med. and Surg. Journal*, Oct. 17, 1901.

Report on a Case of Epithelioma Involving Tonsil, Faucial Pillar, Tongue and Buccal Surface, with Treatment and Apparent Cure. S. A. OREN. *Journ. A. M. A.*, Aug. 10, 1901.

Dangerous Hemorrhage After Removal of Enlarged Tonsils and Adenoids with Report of a Case. A. C. GETCHELL. *Journ. A. M. A.*, October 5.

Technique of the Treatment of Retropharyngeal Abscess. J. CRESPO. *La Medicina Valenciana*, May 3, 1901.

Traumatic Affections of the Uvula. SEYMOUR OPPENHEIMER (New York). *Journ. A. M. A.*, September 7.

Types of Membranous Pharyngitis. W. E. CASSELBERY (Chicago). *Journ. A. M. A.*, July 20, 1901.

The Tongue as a Breeding Place for Germs. H. M. FLETCHER. *Journ. A. M. A.*, July 20, 1901.

Report of a Case of Unusual Tertiary Manifestations (Syphilis of Lingual Tonsil). HUDSON MAKUEN (Philadelphia). *Journ. A. M. A.*, August 17, 1901.

III. ACCESSORY SINUSES.

A Brief Note on the Pathology, Diagnosis and Treatment of Nasal Sinus Affections. E. LAURE VANSANT (Philadelphia). *Journ. A. M. A.*, May 18, 1901.

Anomalies of the Frontal Sinus and Their Bearing on Chronic Sinusitis. REDMOND W. PAYNE (San Francisco). *Journ. A. M. A.*, July 27, 1901.

Empyema Antri Highmori. E. KANASUGI. *Dai Nippon Ji-Bi-In-Ko Kwa-Kwai Kwai Ho*, Tokyo, June 20, 1901.

***Chronic Empyema of the Maxillary Sinus: Operation and Treatment.** J. A. STUCKY (Lexington, Ky.) *Louisville Monthly Journ. Med. and Sur.*, June, 1901.

Tumors of the Frontal Sinus. W. D. HAMILTON (Columbus, O.) *Journ. A. M. A.*, Jan. 26.

Empyema of the Frontal Sinus. E. FLETCHER INGALS (Chicago). *Journ. A. M. A.*, July 27.

Two Cases of Trephining of the Frontal Sinus. COMPAIRED. *Revista de Medicina y Chir. Pract.*, July 21, 1901.

IV. LARYNX AND TRACHEA.

The Treatment of Laryngitis. OTTO T. FREER (Chicago). *Journ. A. M. A.*, July 20.

Edematous Laryngitis, with Report of Cases. JOSEPH S. GIBB (Philadelphia). *Journ. A. M. A.*, July 20.

***Case of Extirpation of the Larynx for Epithelioma.** G. T. HANKINS (Sydney). *Australas. Med. Gazette*, Sept. 20, 1901.

Spasm of the Glottis and Esophagus in Adult Life. A Report of Two Cases. L. D. BROSE (Evansville, Ind.) *Journ. A. M. A.*, June 22, 1901.

Angina Epiglottidea Anterior. CLEMENT F. THEISEN (Albany, N. Y.) *Journ. A. M. A.*, January 19.

Some Notes on Two Cases of Voluntary Whistling. G. HUDSON MAKUEN (Philadelphia). *Journ. A. M. A.*, April 20. 1901.

A Case of Circumscribed Subglottic Tuberculous Ulcer. POLYAK (Lajos). *Orvosi Hetilap*, Budapest, July 14, 1901.

Report of a Case of Laryngeal Stenosis. J. A. ABT. *Pediatrics*, June.

Removal of Foreign Bodies from the Air Passages. DE FOREST WILLARD. *Journ. A. M. A.*, October 26, 1901.

V. DIPHTHERIA, THYROID GLAND, ESOPHAGUS, ETC.

***Notes on Diphtheria.** E. KEN HERRING (Shepparton, Victoria). *Australas. Med. Gaz.*, September 2, 1901.

Total Extirpation of the Thyroid Gland. GEO. F. COTT. *Journ. A. M. A.*, July 20.

Thyroid Tissue in the Larynx and Trachea. OTTO J. FREER (Chicago). *Journ. A. M. A.*, March 30, 1901.

***Intubation in Private Practice and Its Perfection.** J. TRUMP (Munich). *Journ. A. M. A.*, Jan. 26.

Intubation of the Larynx with Personal Reminiscences. F. E. WAXHAM. *Journ. A. M. A.*, April 20, 1901.

Traumatism During Intubation—Its Prevention and Treatment. JOHANN VON BOKAY. *Journ. A. M. A.*, January 26.

VI. EAR.

Bony Defects and Fistulæ in the External Auditory Meatus. H. GRADLE (Chicago). *Journ. A. M. A.*, March 2.

Some Anomalies of the Ear Due to Errors in Development. GEO. C. STOUT (Philadelphia). *Journ. A. M. A.*, April 20, 1901.

Notes on the Pathological Anatomy of the Ear. G. NUVOLI. *Arch. Ital. di Otol. Rin. e Laring.*, Torino, 1901, Vol. xi, p. 495.

An Unusual Ear Case. B. D. HASELTINE. *The Clinique*, September.

Otomycosis. FLETCHER GARDNER. *Wisconsin Medical Recorder*, September, 1901.

A Case of Periosteitis? of the Outer Auditory Passage. S. SATO. *Dai Nippon Ji-Bi-In-Ko Kwa-Kwai Kwai-Ho*, Tokyo, June 20, 1901.

Otorrhea—"A Rising in the Head." WM. LEWIS (Columbus, Ga.) *Georgia Journ. of Med. and Surg.*, August, 1901.

The Rationale and Technique of Pneumatic Aural Massage. B. ALEX. RANDALL (Philadelphia). *Journ. A. M. A.*, August 31.

The Arrest of Progressive Hardness of Hearing, Tinnitus Aurium and Ear Vertigo by Incudectomy. CHAS. H. BURNETT (Philadelphia, Pa.) *Virginia Med. Semi-Monthly*, June 21, 1901.

The Radical Cure for Chronic Suppurative Otitis Media. L. C. CLINE (Indianapolis). *Indiana Med. Journ.*, June, 1901.

Aural Manifestations of Syphilis. FRANCIS R. PACKARD (Philadelphia). *Journ. A. M. A.*, February 2, 1901.

A Case of Combined Gastric and Aural Vertigo, with a Discussion of the Pathology of Such Cases. G. W. MCCASKEY. *Journ. A. M. A.*, March 23.

Meniere's Disease, with Report of a Case. R. A. BACHMANN (Dayton, Wash.) *Journ. A. M. A.*, May 18, 1901.

The Nature and Treatment of Vertigo. J. LEONARD CORNING (New York). *Journ. A. M. A.*, March 16, 1901.

VII. MASTOID AND CEREBRAL COMPLICATIONS.

An Overlooked Nasal Factor in Ear Disease. CHEVALIER JACKSON (Pittsburg). *Journ. A. M. A.*, May 25, 1901.

A New Objective Test for Mastoiditis. ALBERT H. ANDREWS (Chicago). *Journ. A. M. A.*, January 26, 1901.

Acute Mastoiditis After Subsidence and Without Recurrence of Tympanic Inflammation. HIRAM WOOD. *Journ. A. M. A.*, August 3, 1901.

Prevention of Intracranial and Intravenous Complications in Suppurative Diseases of the Ear. J. H. WOODWARD (New York). *Journ. A. M. A.*, February 2, 1901.

The Diagnosis and Treatment of Mastoiditis. EDWARD B. DENCH (New York). *Journ. A. M. A.*, July 27, 1901.

Mastoid and Intracranial Complications of Otitis of Influenza. G. GAVELLO. *Arch. Ital. di Otol. Rinol. e Laring.*, xi, 442, 1901.

The Results of the Surgical Treatment of Inflammation of the Mastoid Process. E. B. DENCH (New York). *Journ. A. M. A.*, March 2, 1901.

Suppurating Mastoiditis, with Report of Cases. J. H. BRYAN (Washington). *Journ. A. M. A.*, May 11, 1901.

Three Cases Illustrating Cerebral Complications of Otitis Media Suppuration. C. W. RICHARDSON (Washington). *Journ. A. M. A.*, Feb. 23.

VIII. THERAPY.

Treatment of Atrophic Rhinitis by Electricity. CAROLUS M. COBB (Boston). *Journ. A. M. A.*, March 16, 1901.

A Note on the Use of Theya Occidentalis in Removal of Papilloma of Larynx. JAMES M. BROWN. *Journ. A. M. A.*, Aug. 3, 1901.

Treatment of Laryngeal Tuberculosis at the Montefiore Home for Chronic Invalids. W. FREUDENTHAL (New York). *Journ. A. M. A.*, March 16, 1901.

X. MISCELLANEOUS.

Syphilis of the Nose and Throat. E. B. GLEASON (Philadelphia). *Internat. Med Mag.*, October, 1901.

The Study of Laryngology in the University and in the Higher Medical Education. JOHN N. MACKENZIE (Baltimore). *Journ. A. M. A.*, July 20.

Cough Due to Reflex Irritation of the Upper Air Passages. FRANK S. MILBURY (Brooklyn). *Journ. A. M. A.*, May 25, 1901.

The Relation Existing Between Diseases of the Conjunctiva, Nose and Throat. HEMAN H. BROWN (Chicago). *Journ. A. M. A.*, June 15, 1901.

Nose and Throat Work for the General Practitioner. GEO. L. RICHARDS (Fall River, Mass.) *Internat. Journ. Surg.*, Oct. and Nov., 1901.

The Effect Which the So-Called Catarrhal Diseases of the Nose and Throat May Have on the General Health. COROLUS M. COBB (Boston.) *Journ. A. M. A.*, July 27.

Limitations of the Laryngologist in the Treatment of Nose and Throat Diseases. H. W. LOEB (St. Louis.) *Journ. A. M. A.*, May 4, 1901.

Voice Preservation. RICHMOND MCKINNEY (Memphis, Tenn.) *Memphis Med. Monthly*, August, 1901.

Changes in the Facial Bones Due to Adenoids. A. T. MITCHELL. *Journ. A. M. A.*, July 27.

Uric Acid Inflammations of the Middle-Ear Tympanic Membrane and Mastoid. CORNELIUS WILLIAMS. *Journ. A. M. A.*, August 24.

General Bodily Resistance as a Factor in Throat Diseases. L. F. STILLMAN. *Journ. A. M. A.*, March 23.

The Physiologic Care of Colds. CHAS. H. SHEPARD. *Journ. A. M. A.*, April 20.

The Influence of Impaired Hearing Upon the Development of the Child. F. A. POWELL. *Iowa Med. Journ.*, September, 1901.

SELECTED ABSTRACTS.

Widening of the Nasal Bones by Benign Polypus—TREITEL (Berlin)—*Archiv. für Laryngologie*, Bd. xii, heft 1.

It is well known that polypi are able to expand the nose laterally, and cases have been reported by Richter, Koenig, Mackenzie, Heymann, Velpeau and Voltolini. Nevertheless, the number of reported cases is small. In most of the cases, where any accurate information is given, it is stated that the new growth, simply by its mass, pushed the nasal bones asunder, so that the handle of a scalpel could be inserted into the furrow between their edges.

The author's case, which is described with great minuteness, differs from these, in that, while there was great lateral expansion of the whole nose, yet examination showed that the nasal bones were firmly united to each other, and the increased breadth resulted from an enormous overgrowth of the nasal bones themselves. The recent work of Cordes shows that increased bony growth may be the result of polyp. Why this should occur in one case, and in another the bones should be simply driven apart, is explained by the author as follows:

In order to produce an overgrowth of bone, the presence of polypi and the consequent irritation and increased ossification must occur just at the age when the bony framework of the nose is in its most active stage of formation. This is from the sixth to the fifteenth year. In the author's case the history makes it probable that polypi had been present from the eighth year. When the irritation from polypi begins after the period of development of the nasal bones, no proliferating ostitis occurs, and if the mass of the tumor is sufficiently large, the nasal bones are simply driven apart. VITTUM.

A Contribution to Our Knowledge of Bony Cysts of the Middle Turbinal—ALBERT SUNDHOLM (Helsingfors)—*Archiv. für Laryngologie*, Bd. xi, heft 3.

After reciting a number of cases the author speculates as to the cause of these growths. The turbinals are to be regarded as nothing else than the ends of lamellæ of the ethmoid, which project into the nasal cavity. It is most probable that these cysts are simply misplaced ethmoidal cells. The author thinks that they are congenital and in most cases cause no disturbance, although they cause a marked narrowing of the nasal cavity in its upper portion. Where, however, a rhinitis becomes associated with this condition, the nasal obstruction becomes so great that a physician is consulted and the condition discovered. VITTUM

What Physiological Significance Has the Uvula for the Singing Voice?—W. BOTTERMUND (Dresden)—*Archiv. für Laryngologie*, Bd. xii, heft 1.

This paper is in the main a transcript of an opinion given by the author in a medico-legal case where a singer had brought suit against a surgeon for the complete removal of the uvula. The claim was made that permanent injury had been done the voice, and the author was requested to give an expert opinion.

Without attempting to follow out the author's reasoning, it may be said that the uvula is an appendage of the soft palate and is necessary to the complete and perfect performance of its functions. The utmost perfection of function is demanded in a singing voice, especially in the formation of gutturals and in the nasal production of the vowels in vocalizing, which latter depends almost entirely on the position assumed by the soft palate in connection with the uvula. A diseased uvula is more or less disturbed in its functions. If it is greatly misshapen, it may by friction act like a foreign body and disturb phonation.

A diseased uvula may be restored to its normal functions by surgical means. Interference with phonation caused by a very long uvula may be relieved by operation. In this case the uvula is shortened. A complete removal of the uvula with no other indication than a simple elongation is not the custom in laryngological practice. The operation of shortening the uvula, formerly so much in vogue, is now only performed where the organ is of excessive length and where disturbances can be clearly traced to that condition. VITTUM.

The Influence of Ulceration of the Mucous Membrane in Acute Suppuration of the Auxiliary Sinuses—GEORG AVELLIS (Frankfort-on-Main)—*Archiv. für Larynoglogie*, Bd. xi, heft 3.

The cases of acute suppuration of the sinuses which do not heal are, according to Zuckerkandl, those where some obstruction exists to the exit of the secretion. The author is inclined to think that he has discovered another cause. His opinion is based on two cases of acute inflammation of the frontal sinus, where the symptoms persisted in spite of removal of the middle turbinal and probing the ductus frontalis. Simple trephining was done, and on the posterior wall of the frontal sinus there was found in each case an ulceration the size of the thumb nail. At this point the bone was pale, slightly roughened and necrotic. In both cases most extreme pain was present during all the course of the trouble. The cavity was not obliterated, for the symptoms soon subsided and a complete cure was effected without deformity. VITTUM.

A Contribution to Our Knowledge of the So-Called Singers' Nodules—Ottokar Chiari (Vienna)—*Archiv. für Laryngologie*, Bd. xi, heft 3.

In order to determine whether these nodules are the result of diseased glands, the author undertook the task of making serial sections of a number of specimens. First he restricts the term to those growths which are not larger than a pin-head, are situated near the middle of the free border of the vocal cord and are pale. Pedunculated growths are excluded.

The author argues that if these growths arise from the degeneration of a gland, then fragments or traces of the gland should be found by careful serial cutting.

Nine typical specimens were successfully cut. In no instance was any evidence of glandular tissue found. Three were found to consist of hypertrophy of the epithelium and its underlying connective tissue, with dilated blood vessels and open spaces, but no trace of glandular tissue. In the other six the structure was similar to that of a papilloma. Little masses of epithelium were indeed found which, however, appeared to indicate a simple epithelial thickness, or the division of the nodules into several papillæ.

Several other growths were examined, but they were not typical nodules, and only in two cases, which were cystic in nature, did he discover the remains of glands. Vittum.

The Relations of the Maxillary Antrum to the Sphenoidal Sinus and to the Anterior Ethmoidal Cells—A. Onodi (Budapest)—*Archiv. für Laryngologie*, Bd. xi, heft 3.

The author calls attention to a condition which has not been mentioned either by Zuckerkandl or by Hajek. This is an extension upward of the maxillary antrum and a forward and downward extension of the sphenoidal sinus, until they approach each other and have only a very thin common wall of bone separating them. This condition he found in several instances.

In regard to the anterior ethmoidal cells, the author cites a condition which has been overlooked by Hartmann in his recent work on the frontal sinus. In several instances direct communication was found to exist between the maxillary antrum and an anterior ethmoidal cell. In some instances the ostium maxillare was situated n front of and above the anterior extremity of the lower turbinal. The opening of the frontal sinus and of the anterior ethmoid cells lay behind the ostium.

In several instances the canal from the frontal sinus and the anterior ethmoid cells opened on a vertical plane with the ostium.

Vittum.

BOOK REVIEWS.

A Text-Book on Diseases of the Ear, Nose and Throat. By CHARLES H. BURNETT, M. D., Philadelphia; E. FLETCHER INGALS, M. D., Chicago, and JAMES E. NEWCOMB, M. D., New York. Octavo, cloth, 716 pages, 282 illustrations. Price, $5.00. Publishers, J. B. Lippincott Co., Philadelphia and London, 1901.

Though a great tendency prevails, especially among our confreres abroad, to separate otology and laryngology, and to consider these special branches distinct and independent, there is still a sentiment in America to maintain a closer association in the field of otology, rhinology and laryngology. Especially is this desirable in the production of the more exhaustive treatises in our field of science, and the volume under consideration is a joint text-book on these diseases and their treatment.

Like the "American Text-Book of Diseases of the Ear, Nose and Throat," this work is exhaustive in its scope, and has an additional advantage in having but three main sub-divisions, each written by a practical teacher specially familiar with his section.

Section I, by Chas. H. Burnett, of Philadelphia, treats of the Diseases of the Ear. In greater part the arrangement and character of this section is essentially a revision of the author's "Text-Book on the Diseases of the Ear."

Many chapters, especially those on Anatomy of the Ear, Therapy and Sequellæ of Chronic Suppurative Otitis Media, have received more consideration.

Section II comprises the Diseases of the Nose and Naso-Pharynx, by E. Fletcher Ingals, of Chicago, assisted by Otto T. Freer, of Chicago.

This chapter is thoroughly up-to-date and is especially rich in practical suggestions. Special prominence is given to the chapters on Adenoids, Reduction of Septal Deflections and Treatment of the Accessory Sinuses.

Section III, by Jas. E. Newcomb, comprises the Diseases of the Pharynx and Larynx. This section is unusually well presented and the literature of the subject is cited up to date.

A prominent chapter on Diphtheria is included, together with latest data concerning anti-toxin and its administration. The experience of the author with Malignant Neoplasm of the Larynx makes this chapter of more than usual value.

We must note that the index of this large volume is rather incomplete and scant.

The text-book, as a whole, is an unusually good one, and the subject matter has been carefully prepared.

The Accessory Sinuses of the Nose: Their Surgical Anatomy and the Diagnosis and Treatment of Their Inflammatory Condition. By A. LOGAN TURNER, M. D. (Edin.), F. R. C. S. Ed., Surgeon for Diseases of the Ear and Throat, Deaconess Hospital, Edinburgh. Large octavo, cloth, 212 pages, 40 plates and 81 illustrations. Price, 12 shillings ($3.00) net. Publishers, William Green & Sons, Edinburgh, 1901.

In 1898 our esteemed collaborator, Dr. A. Logan Turner, delivered a lecture before the Fellows of the Royal College of Surgeons of Edinburgh on the subject of "The Illumination of the Air Sinuses of the Skull, with Some Observations Upon the Surgical Anatomy of the Frontal Sinuses." In 1899 Dr. Turner was awarded the surgical prize of the above scientific body for an essay on "Racial Characteristics of the Frontal Sinuses, Based Upon the Examination of 578 Skulls."

The subject matter contained in these communications form the basis of the presented volume, to which have been added additional chapters on the surgical anatomy of the maxillary sinus, the ethnoidal and sphenoidal cells. Three chapters have also been included relative to diagnosis and treatment of the "Suppurative Affections of the Nasal Accessory Sinuses."

It is evident that the author has had placed at his disposal an unusually valuable anatomical collection to carry out these investigations. The outcome of these investigations has been a thoroughly classical monograph, possibly the most complete thus far published on this subject in the English language, and presented in a thoroughly artistic style.

The anatomy of the accessory cavities is given a most careful treatment, and the detailed descriptions are greatly enhanced by a series of beautifully executed drawings and photographs of original dissections and skulls.

Chapters vii, viii, ix and x, consider, respectively, transillumination, etiology and pathology, diagnosis and treatment of suppuration in the accessory sinuses. The variety in technique of transillumination is given very exhaustive consideration. In the chapter on diagnosis of suppurative sinusitis, especially of the chronic form, every form of examination and exploration is minutely described. In the concluding chapter, on the treatment of suppuration of the accessory sinuses, every technique operation and recent suggestion concerning treatment is given space.

The typography of the volume and the clearness and excellence of the many plates is unusually fine and deserves the highest compliment.

We congratulate Dr. Turner on the production of this classic and beautiful volume.

Physician's Visiting List (Blakiston), 1902. Fifty-first year of publication. As popular as ever. Price, $1.00. Published by P. Blakiston's Sons & Co., 1012 Walnut street, Philadelphia.

Diseases of the Upper Respiratory Tract, the Nose, Pharynx and Larynx. By P. WATSON WILLIAMS, M.D. (London), Physician in charge of the Throat Department at the Bristol Royal Infirmary; Physician to the Bristol Institute for the Deaf and Dumb. Fourth Edition, octavo, cloth, 436 pages, 207 illustrations, 12 colored plates and 20 stereoscopic plates, together with portable stereoscope. Price, $6.00. Publishers, Longmans, Green & Co., New York, London and Bombay, 1901.

We have commented so favorably upon previous editions of this excellent book that it will be only necessary to refer to the new features contained in the present (fourth) edition.

The contents of the volume has been considerably increased mainly owing to additional chapters on "Diphtheria" and "The Diseases of the Nasal Accessory Sinuses," and to a very large increase in the number of illustrations.

The most attractive feature of this edition consists of the reproduction of an interesting series of stereoscopic plates, and with each volume is furnished a portable stereoscope to be used in connection with these plates.

Several valuable paragraphs on subjects of clinical importance have been added and serve to enhance the practical value of the book.

The excellent series of specially prepared stereoscopic plates is a very effective form of illustration and brings out many features in the preparations which might otherwise be lost.

The Surgical Anatomy and Operative Surgery of the Middle Ear. By A. BROCA, Surgeon of the Trousseau Hospital, Supernumerary Professor to the Faculty of Medicine of Paris. Translated by Macleod Yearsley, F. R. C. S., Surgeon to the Royal Ear Hospital, London. Octavo, cloth and gold, 64 pages, 56 illustrations. Price, $1.00. Publishers: Rebman Co., Ltd., 129 Shaftesbury Avenue, Cambridge Circus, London, 1901.

The translation into English of this excellent French monograph by Mr. Macleod Yearsley, presents it for the ready perusal of American and British otologists.

The surgical anatomy and topography of the middle ear is of great importance to us, especially in the light of recent investigations and the many variations in operative technique. The clear and concise description of this field by a surgeon of Broca's wide reputation and experience makes this monograph unusually valuable. Every phase of operative surgery of the ear has been carefully considered in detail, especially the several variations of the mastoid operation.

To the exhaustive description is added a series of excellent photographs and illustrations, identical with those used in the original French monograph. No progressive otologist should fail to secure a copy of this monograph. M. A. G.

Anatomy, Descriptive and Surgical. By HENRY GRAY, F. R. S., Lecturer on Anatomy at St. George's Hospital, London. Thoroughly revised American from the 15th English Edition. In one imperial octavo volume of 1,246 pages, with 780 illustrations. Price, with illustrations in black, cloth, $5.50 net; leather, $6.50 net Price, with illustrations in colors, cloth, $6.25 net; leather, $7.25 net. Lea Brothers & Co., Philadelphia, 1901.

Perhaps the most popular and universally known of all medical works in the English language is "Gray's Anatomy."

No further comment concerning this masterpiece of anatomical literature is required than to herald the appearance of a new revised American edition from the Fifteenth English edition.

Additional chapters and illustrations on Histology and Embryology have been added to this "New Century" edition.

Progressive Medicine, Vol. III, September, 1901. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 428 pages, 16 illustrations. Per annum, in four cloth-bound volumes, $10.00. Lea Brothers & Co., Philadelphia and New York.

This volume contains but one chapter of special interest to our readers, namely, that on "Diseases of the Thorax and Its Viscera," and a well-written chapter on "Pulmonary Tuberculosis," by Wm. Ewart, bringing the literature of the subject up to date, is specially worthy of mention.

Another chapter on "Bronchial Affections and Their Treatment," contains many practical suggestions for the Laryngologist. There are also small chapters on "Coryza," "The Treatment of Hay Fever," "Influenza," "Whooping-Cough" and "The Thyroid and Thymus Glands."

Atlas der Krankheiten der Nase, ihrer Nebenhoehlen und des Nasenrachenraumes. By DR. P. H. GERBER, of Königsberg. Issued in 6–7 parts, each containing 5–6 lithographic plates, with descriptive text. Price per part, 6 marks ($1.50). Published by S. Karger, Karlstrasse 15, Berlin, Germany, 1901. American agents, Lemcke & Buechner, 812 Broadway, New York.

Parts 5, 6 and 7 of this excellent atlas have just been issued. Section five contains a series of plates illustrating the affections of the accessory sinuses. Section six comprises tuberculosis and syphilis of the nose and naso-pharynx. Section seven illustrates nasal deformities. The publishers announce that the last part (Section 8) will appear within six weeks.